Internists' Supplement

Contributed by

The American College of Osteopathic Internists

Volume 7
Number 1

February, 1952
Pages 1 to 20

Journal A.O.A.
Vol. 51, No. 6

INTERNISTS' SUPPLEMENT

American College of Osteopathic Internists

Editorial Office, 212 East Ohio St., Chicago, 11.
Address all communications to the Chicago office.
Copyright, 1952, by the American Osteopathic Assn.

EDITORIAL COMMITTEE

LEONARD V. STRONG, JR., CHAIRMAN.....New York
THEODORE W. STIEGLER, JR. .....Wilmington, Del.
RICHARD DENISE.....Des Moines, Iowa

OFFICERS

PRESIDENT.....William F. Daiber, Philadelphia
PRESIDENT-ELECT.....A. L. Pettigrew, Long Beach, Calif.
SECRETARY-TREASURER.....Glennard E. Lahrson, Oakland, Calif.

Volume 7 **February, 1952** **Number 1**

CONTENTS

The Etiology and Genesis of Peptic Ulcer: The A. D. Becker Memorial Lecture, 1951.
Glennard E. Lahrson, B.A., D.O., F.A.C.O.I., Oakland, Calif..... 3

Pangamic Acid (Vitamin B_{15}) in Heart Disease.
A. L. Pettigrew, D.O., Long Beach, Calif. 8

Preservation of Body Fluids.
Maxwell R. Brothers, D.O., Los Angeles.....13

Newer Antibiotics.
William B. Strong, D.O., Brooklyn.....16

The Etiology and Genesis of Peptic Ulcer*

The A. D. Becker Memorial Lecture, 1951

GLENNARD E. LAHRSON, B.A., D.O., F.A.C.O.I.
Oakland, Calif.

INTRODUCTION

In paying homage to the memory of great men the world has found many avenues of expression for tribute. Schools, hospitals, and public buildings bear the names of countless honored dead. Magnificent statues of scholars, scientists, and statesmen stand as mute testimony of an admiring world. Beautiful music and great books have been written in memory of those who have made important contributions to the welfare of society. Trees have been planted as living reminders to posterity of men whose lives have enriched the world.

We tonight honor a great man in a memorial which is more significant than any mere naming of park or hospital or tree. The name of Dr. Arthur D. Becker, physician, scholar, and educator, is on the lips of every member of the College of Osteopathic Internists each year as we assemble for our convention. How very fitting that the name of the man whose passionate devotion to scientific achievement and progress should be thus perpetuated as annually a member of our college addresses this group on a professional topic.

I feel especially honored to be privileged to deliver the Arthur D. Becker Memorial Lecture in the city where Dr. Becker lived and worked and ultimately ended his outstanding career as president of the Des Moines Still College of Osteopathy.

ETIOLOGY AND GENESIS

The professionally honest physician will agree that there is no disease he treats as purely symptomatically as he does peptic ulcer. Of the many recurrent diseases seen in the hospitals and the offices of general practitioners and internists today, there is none that has a more discouraging morbidity rate than does this disease. The active uncomplicated ulcer will respond readily to medical management in 90 to 95 per cent of cases, but the cure is often only temporary. Consider for a moment that half of these patients will suffer a relapse within 1 year, and after 10 years only one in ten will have no symptoms. A more comprehensive and less hurried study of these patients from the viewpoint of etiology and genesis will lead to a greater measure of success in therapeutic management.

The etiology of a disease is the cause or causes. In many diseases a specific cause has been recognized; the etiology is known. There is a large group, however, for which no known cause has been found, and of these diseases we say the etiology is unknown. Although peptic ulcer is one of these illnesses of unknown etiology many factors are known. Various theories of its etiology have been proposed, some of which will be explored tonight.

The genesis of a disease is the study of its evolution or development and an explanation of its coming into being as a diseased state. Surgeons, internists, physiologists, pathologists, and psychiatrists have advanced numerous and varied theories on the subject of peptic ulcer for many years. The need for more careful evaluation of the ever-increasing number of patients who suffer from stomach disorders has prompted me to select "The Etiology and Genesis of Peptic Ulcer" as the topic for this address.

In gastric and duodenal ulcer, as well as peptic ulcer in other locations, there is an erosive action of the pepsin-hydrochloric acid, hence the term "peptic ulcer" is well chosen. Geographically these peptic ulcers are found in those regions exposed to the action of acid. Gastric ulcer is most frequently situated on the lesser curvature near the incisura angularis or on the anterior or posterior wall in this limited area and usually involves the pyloric part of the stomach. Duodenal ulcer occurs rarely beyond the first inch of the duodenal cap. Stomal ulcer occurring after gastrojejunostomy will usually be located in the mucosa of the jejunum at the site of anastomosis. A peptic ulcer is sometimes found in a Meckel's diverticulum which contains ectopic gastric glands. When the lower portion of the esophagus is subjected to highly acid regurgitated fluid it may become the site of an ulcer. From this anatomic predilection of peptic ulcer we observe that the most common areas involved are not in the muccosa which itself secretes the acid, but in the neighboring part which normally secretes neutral or alkaline fluid.

It is interesting to read about gastric and duodenal ulcer in the standard texts of 40 and 50 years ago. James Anders[1] in 1906 wrote as follows: "The affection (gastric ulcer) is often secondary in chlorosis, anemia, and more often in amenorrhea. The fact that in all the different forms of anemia there is a diminished alkalinity of the blood is of great interest in this connection." Anders also stated, "Obviously, then, ulcer occurs more frequently in females than in males. It is most common between seventeen and thirty-five years; it is rare in young children . . . and less rare in those past middle life. It is more frequent in the poor than in the rich; occupation has also a noticeable influence, and I have personally seen instances in weavers. It is also prone to attack servants, cooks, and needlewomen among females, and shoemakers, tailors, saddlers, and carpenters among males." Of duodenal ulcer, Anders noted that it was met in chronic Bright's disease, pneumonia, and in association with gallstones. He also felt that males were more susceptible than females, with the highest incidence between the twentieth and fortieth years.

Our contemporary concept of peptic ulcer differs in many respects from the statements just quoted. The only basis for statistical data is that of hospital records, which do not reflect the actual incidence in such a variable disease. One institution reports that 30 per cent of all cases coming to necropsy show evidence of either active or pre-existing peptic ulcer. This figure would undoubtedly be high when applied

*Presented at the meeting of the American College of Osteopathic Internists, Des Moines, Iowa, October 30, 1951.

on a national level. However, we are aware that it is one of the very common diseases of the digestive tract, occurring in the male about six or eight times as frequently as in the female. Duodenal ulcer is about six times as prevalent as gastric ulcer, and although it is no respector of age, the incidence is higher between the twentieth and fortieth years than during other periods of life. It is not a disease peculiar to the poor; it involves people from all walks of life, and it is apparently not associated with occupation. That there is a steady increase in the incidence of peptic ulcer is a statement needing no qualification.

What do these comparative observations mean in approaching an understanding of the etiology and genesis of peptic ulcer? Our diagnostic acumen has been sharpened by progressive studies in organic and inorganic chemistry and biochemistry, by the advancement in technics and interpretations of radiography, and through the development of gastroscopy. Earlier and more accurate diagnosis often causes statistical curves to show an apparent increase in incidence of disease, but in peptic ulcer the increased incidence is unquestionably actual. The constant upheaval of a changing world, influencing the social, economic, and moral standards of our civilization, will probably be credited as the major force in the increased incidence of this disease entity.

A recitation of all the theories proposed in explanation of the etiology of peptic ulcer cannot be undertaken in this discussion. All noteworthy contributors are agreed that peptic ulcer is not the result of a single agent, but a product of the interaction of various agents. Let us review some of the major theories with an explanation of their interaction in order to reach a basis for a common understanding.

One of the earliest theories of etiology is the vascular theory. The basis of this theory is that a local embolus or thrombus interfering with circulation and leading to infarction of the gastric area supplied by the affected vessel will result in ulcer formation. The devitalized area, being subjected to digestion by acid secretions, is also vulnerable to trauma. Occurrence of an ulcer without some disturbance in local nutrition is unlikely, but it is generally accepted today that definite pathologic change in the blood vessels is not required. Demonstrable pathologic changes in the blood vessels in the vicinity of an ulcer may be the result and not the cause of the ulcer. Arteriosclerotic changes in gastric vessels are exceptional even in patients with generalized arteriosclerosis.

The anatomic theory is founded on the belief that an embolus usually occurs in a vessel of large caliber at the point where a narrow vessel branches off. Other anatomic observations are that the ulcer-bearing portion of the stomach has the poorest blood supply and that in these areas the vessels are terminal. While non-ulcer-bearing areas of the stomach, such as the fundus, also have terminal vessels, it is known that physiologic function differs in the various areas of this organ. This probably accounts for the fact that infarctions are rarely encountered here. The anatomic theory does not explain why a thrombus will form in the gastric vessels of one person and not in another with practically the same vascular arrangement.

The neurogenic and spasmogenic theories will be discussed together because many of their salient features are similar. Impetus to investigation has been stimulated by the knowledge that disturbed innervation has a deleterious effect on the blood vessels as well as on the tissues supplied by the blood vessels. Local nutritional deficiency leading to ischemia and ulcer formation may be due to functional disturbances of the blood vessels and not necessarily to organic disease. The physiology of blood vessels, especially that related to innervation and response to stimuli, explains one of the important factors of integration between cause and effect.

Increasing appreciation of the importance of the autonomic nervous system in health and disease has stimulated much investigation but, although numerous important facts have been ascertained, many of the finer details of structure and physiology remain a mystery. Adequate proof is available to show that in the ulcer patient there is an imbalance in the autonomic nervous system. This system may be defined as that division of the nervous system which includes all the neurons lying outside the central nervous system and cerebrospinal ganglia, except those associated with the organs of special sense and the cells through which these outlying neurons are functionally connected with the central nervous system. The autonomic nervous system is also known by other terms such as "involuntary," and "vegetative." The nerves which supply the viscera are arranged in a netlike system of nervous pathways—a reticulum with nerve cells scattered about. In order that there be harmony of function within each organ and between all of the viscera, there is a central regulator of activity: the central nervous system. This central connection is made through filaments in the somatic nerves.

Autonomic nervous system function is entirely motor and could conceivably be called the "visceral motor nervous system." The fundamental difference in purpose between the somatic motor and the autonomic system is important. Somatic motor response is quick and powerful; the onset is sudden and relaxation is also rapid. You will remember this contraction as being called "phasic." Visceral function is automatic if supplied with the necessary materials and conditions. Nervous response in the viscera is restricted to increasing or decreasing that function. The motor response is slower and is called "tonic" because it alters tone. Since visceral function may be either increased or decreased as the result of suitable response to its nervous system, it is implied that there are two opposing systems. These are called "sympathetic" and "parasympathetic," both of which may supply a single viscus.

A statement of certain generalities concerning the function of the autonomic nervous system is necessary to better understand the control exerted on the individual organs. It is commonly supported that the sympathetic system provides alteration of function of the various organs to enable the body to cope with emergency demands. Examples of these conditions are combat, flight, pursuit, pain, fear, and rage. The parasympathetic system gains the ascendency during rest, digestion, and generally pleasant states. Some individuals may show outward signs of sympathetic or parasympathetic activity. A shift of balance toward a state of sympathicotonia or parasympathicotonia, also called vagotonia, is normally exhibited by certain persons. This distinction is of some clinical significance since it is believed that certain diseased conditions are more frequent in one type than in the other.

During emergency conditions of combat, fear, rage, and the like, an emotional state is attained which sets off a chain of reactions, the end result of which is to further complete sympathetic action. The emotional response stimulates the hypothalamus which sends impulses to the adrenal medulla resulting in an increased adrenalin output. Adrenalin, circulating in the blood, reaches the postganglionic sympathetic endings and stimulates their activity. You are well aware of the ramifications of this response.

Sympathetic and parasympathetic fibers supply the digestive tube from the esophagus to the rectum. The sympathetics are derived from probably every segment in the thoracolumbar outflow. The parasympathetic nerve supply is derived entirely from the vagus. The extrinsic autonomic nerve supply to the digestive tube is merely regulative in function. These extrinsic nerves may be severed completely and the digestive tube will still perform its function. However, normal physiologically balanced function is dependent upon the integrity of both components.[2]

Ample evidence has been furnished showing the importance of the autonomic nervous system in producing symptoms from any individual organ. Imbalance in this system may be responsible for symptoms originating in any organ without the appearance of pathologic changes in that organ. We have already noted that individuals may be classified as vagotonic or sympathicotonic; however, a purely vagotonic or a purely sympathicotonic person does not exist. While an individual may show instability of the vagus in a certain organ and of the sympathicus in another, it is a more important fact that at one time there may be evidence of vagae instability and at another time of sympathetic imbalance in the same organ. The total number of possible symptom complexes that are possible when such an intricate machine is at work can only be imagined.

That the organs of internal secretion play an important role in maintaining an equilibrium in the autonomic nervous system cannot be denied. Another function of some of the hormonal glands is that of maintaining electrolytic equilibrium, which in turn is recognized as a factor in autonomic function. There is such a close interrelationship between these three systems—the autonomic nervous system, the organs of internal secretion, and electrolyte ratio—that they are sometimes considered as a unit.

One of the ultimate effects of an autonomic imbalance is spasm of local gastric blood vessels, particularly terminal vessels, causing an ischemia capable of eventually leading to peptic ulcer. Spasm of the muscularis mucosa, causing compression of a blood vessel in the mucosa of the stomach, may similarly produce ischemia. Surgeons frequently encounter areas of ischemia in the ulcer-bearing portions of the stomach without other evidence of ulcer formation. The end result of ischemia is the same regardless of the mechanism responsible for its development.

We, as osteopathic physicians, have been aware of many of these ramifications of autonomic nervous system imbalance through clinical observations. Dr. Samuel Robuck,[3] in his lecture on this occasion last year, ably presented the established experimental data of osteopathic research on "The Relation of the Osteopathic Somatic Lesion to Visceral Pathology." The effect of the vertebral lesion on autonomic function has been demonstrated in the experimental animal and observed clinically by osteopathic physicians for decades. An occipitoatlantal lesion can most certainly affect parasympathetic function just as dorsovertebral lesions can produce sympathetic dysfunction. The result of osteopathic somatic lesions, as related to this topic, may be spasm of the blood vessels, hypersecretion of hydrochloric acid, hypermotility of the stomach, or pylorospasm—all of which are manifestations of autonomic nervous system imbalance.

Another theory of etiology is the "acid theory" or the "theory of hyperacidity," sometimes referred to as "the role of hydrochloric acid." Since a state of increased hydrochloric acid is practically always found in peptic ulcer, especially in duodenal ulcer, many consider that hydrochloric acid and pepsin are of major importance in the genesis of peptic ulcer. Chronic benign ulcer of the stomach and duodenum rarely occurs in patients with permanent achlorhydria. Patients with pernicious anemia are particularly free from attack of peptic ulcer. As previously stated, ulcers are found only in those locations exposed to the destructive action of acid gastric juice. There is a gradient susceptibility to acid injury. The farther away the mucosa from the source of acid formation, the less the resistance of the surface epithelium to injury by acid. Jejunal mucosa is much more susceptible to the action of gastric juice than is the first portion of the duodenum but it has been shown that after gastro-jejunostomy the jejunal mucosa near the anastomosis soon takes on the characteristic protective mechanism.

The age-old question of what protects the stomach mucosa from autodigestion by the pepsin-hydrochloric acid has been answered in many ways. It is generally recognized that under normal conditions the mucosa of the stomach is protected against acid corrosion and other trauma by a layer of mucus, produced by mucus-secreting epithelium. If the innervation to a localized area of the mucosa is disturbed or if the autonomic balance is upset, effecting hypersecretion of pepsin-hydrochloric acid, the protective action of the mucus is overcome. This protection lost, the mucosa is subject to trauma and the action of acid may result in ulcer formation. Another explanation offered is that the blood coursing through the vessels of the gastric tubules with alkalinity increased as a result of the chloride ion loss, serves to neutralize the effect of the acid juice. The presence of anti-pepsin and the peptones is also given credit for this protection.

Hyperacidity may not always be found in peptic ulcer and many cases are seen with subacidity or anacidity. This, however, does not indicate that hyperacidity was not present before the ulcer developed or during the early stages of the ulcer. Factors such as gastric catarrh with excess mucus, or oozing of blood into the stomach, may account for the diminished acidity. If the ulcer has persisted for a long time the acid secretory mechanism may have become exhausted. Careful studies have demonstrated that in the majority of peptic ulcer cases there is an actual hypersecretion. That this phenomenon can be reproduced by the injection of histamine has been observed experimentally as a response to mental excitement and emotional disturbance. Many physiologists and biochemists have contributed their explanations of the mechanism of acid secretion by the stomach. The field of electrophysics has more recently been applied to the research problems of acid secretion.

It has been demonstrated that vagus overflow produces hypertonicity or spasm of the pyloric sphincter. Hypermotility of the gastrointestinal tract in general with increased and prolonged secretion of hyperacid gastric juices is also brought about in this manner. Secretion of the protective mucus is first stimulated and then inhibited. Gastric secretion and motility is also stimulated by the intake of food. However, in the presence of pylorospasm, gastric motility ceases and food is retained; thus the normal reflux of duodenal substance is prohibited by the spastic pylorus and its neutralizing effects are lost. This disturbed muscular action and intermittent spasm interferes with the normal blood supply to the tissues, leading to ischemia and lowered resistance. In this manner the predisposed areas are made susceptible to the action of pepsin-hydrochloric acid.

It is well to recall again that peptic ulcer is not the result of a single agent but is a product of the interaction of various agents. The theories mentioned have been of some value in understanding how peptic ulcer is brought about in many patients. One important question not answered is why only certain individuals are affected with peptic ulcer.

I have alluded to the underlying tendency of some individuals to develop certain diseases. This is the constitutional theory of etiology. External features are considered to indicate certain constitutional types. These external appearances may offer a clue to the expected diseases. Yves Chaput[4] describes the duodenal ulcer type, ". . . as one characterized by leanness, a pale and sometimes even waxy face, more or less protruding cheekbones, and a tired expression. Such individuals give the impression of being active, energetic, dynamic, and highly nervous, but incapable of a sustained effort, and the whole aspect resembles that of neuropathy with which it is often confused." There are exceptions, certainly, but many of our duodenal ulcer patients do fit into this category. The constitutional factor in relation to disease may help to explain the familial tendency toward peptic ulcer; many of us have noted the tendency to ulcer development in families.

Constitutional or body types, when they deviate from the average or normal, are classified as asthenic or hypersthenic. Let us examine these types in relation to peptic ulcer. A typical hypersthenic individual is broad and often short with the stomach usually horizontal. He bolts his food, thus pouring the acid gastric contents into the duodenum. This repeated irritation can result in a duodenal ulcer. The asthenic individual is slender and often tall with a low hanging stomach. There is delayed emptying of the stomach due to atony with a tendency towards stagnation of food. This causes irritation on the gastric side which, if persistent, may cause gastric ulcer.

Probably the most important feature of the constitutional theory is that an individual born with certain constitutional defects may, through environment or by his attempt to compensate for these defects, actually reverse the process, or overcompensate. This knowledge has changed our thinking somewhat and helps account for some of the bizarre patterns of the symptom complex. It can be said then that the attributes with which an individual is born are called the actual constitution and those characteristics acquired since birth make up the conditioned constitution. The person born with actual constitutional deviations may compensate on an unconscious level and live a relatively average normal life. It is with the conditioned constitutional defects, however, that more trouble can be expected. In other words the actual constitutional defect is less harmful than the conditioned constitutional defect. A patient with an actual constitutional defect may be entirely symptom free with normal function. However, without change in external appearance alterations may occur which result in a disease. As regards peptic ulcer, it has been observed that when an ulcer develops in the asthenic individual who has become a conditioned hypersthenic type, the ulcer will usually appear on the duodenal side. Conversely, if a hypersthenic person becomes a conditioned asthenic type a gastric ulcer is usually found.

Other theories and factors of minor significance, such as digestive ferments, toxicity, catarrh, mechanics, anemia, avitaminosis, bacteria, hormones, and direct trauma, are undoubtedly contributory and play some role in the complex etiological pattern.

To this point in the discussion the purpose has been to review the major theories of etiology and to recall the more important functions of the autonomic nervous system as applied to the etiology of peptic ulcer. Almost all of the facts of digestion up to the year 1800 were based on supposition and conjecture. It was not until the work of William Beaumont that interest was stimulated in normal and pathologic physiology of the stomach. The unfortunate Alexis St. Martin was the subject whom Beaumont studied and observed for several years. The French Canadian, St. Martin, had suffered a gunshot wound of the abdomen and, refusing surgical repair, ultimately developed a gastric fistula, through which Beaumont made visual observations of the inside of the human stomach during life. He found many of the preconceived ideas relative to the action of the stomach to be incorrect and through his work a new concept of digestion was initiated. Although Beaumont's primary interest was in study of the gastric juice, probably the most important fact established was the recognition of the central role of emotional influence in digestion.

Other investigators followed, each adding refinements in the technic of research, and a few isolated contributions were made. It was not until the contemporary work of Wolf and Wolff[5] that more truly scientific conclusions could be established about gastric function. Their experiments have been given wide publication and their book, "Human Gastric Function," should be recognized as a classic. Some of their work was based on the long and well-planned study of a subject named "Tom" who also had a permanent gastric fistula. At the age of 9, Tom suffered burns of the esophagus which resulted in stricture. Because he failed to respond to corrective measures a gastrostomy was performed leaving the permanent gastric fistula, through which he fed himself for almost 50 years. These doctors performed exhaustive and comprehensive experiments. In addition to observing the response to a large number of stimuli such as drugs, chemicals, and physical agents, they also studied the effect of various life situations and emotional states. Certain situational factors were observed to cause not only vasomotor changes in the face, changes in mood, and general muscular activity, but also hyperemia, hypermotility, and hyperacidity in the stomach. It was also noted that under other situations the exact op-

posite could occur, leading to hypofunction of the stomach. Its contents remained undigested, and ultimately resulted in nausea and vomiting. Wolf and Wolff demonstrated that these functional alterations in the stomach, if sustained, can lead to distressing symptoms and to structural damage.

That emotional factors play a major role in the genesis of peptic ulcer is not a new theory. Medical literature for several decades has mentioned it, but with few exceptions it has not been explained. The recognition of possible emotional factors is not enough. It seems logical that the physician should be equally as interested in the investigation of the emotional disturbance contributing to the disease as he is in the bacteriologic morphology. Of all diseases, peptic ulcer demands this consideration more than any other.

Too many physicians use the word "psychosomatic" as a substitute for a diagnosis. Many internists feel that the recognition of emotional factors in peptic ulcer is an end, rather than a means to an end, in the management of this disease. It appears, then, that the popularity of psychosomatic medicine today has not necessarily resulted in an increased benefit to the patient.

The physician who understands the dynamics of emotional disturbances and deals actively with his patient's life situations and interpersonal relationships will decrease the chronicity of peptic ulcer. It is not my purpose to stimulate membership in the college of neuropsychiatry but rather to emphasize the importance of the psychosomatic factors underlying this topic. The number of trained psychiatrists is small; therefore, referring to them the majority of peptic ulcer cases would be absurd. Until the physician will thoroughly evaluate the peptic ulcer patient etiologically from the somatic and the psychic findings, the use of antacids, antispasmodics, and diet alone will continue to be disappointing.

An emotional pattern is the end-result of the reaction of an individual's personality to his life situation. Every person has conflicts within himself and with the external world. Most people recognize these external threats but are not aware of the internal difficulties. The principal function of the cerebrospinal and autonomic nervous systems is the maintenance of a dynamic equilibrium between supply and output of energy. This balance may be upset both by external stimuli and by the process of living itself. Psychologically, this state of equilibrium is called "stability," and physiologically it is called "homeostasis." The principle of stability is similar to the instinct of self-preservation. The process of life, if it is to function smoothly, depends on the optimum of stability in all internal conditions. Any threat to the homeostasis or stability, whether it be in the form of internal needs and wishes which seek gratification, or whether it be due to an external threat to the organism, will result in an imbalance of the autonomic nervous system with concomitant physiological changes.

Emotional factors may exist on two planes—on the conscious level or on the unconscious level. It is not difficult to discover the conscious emotional factors that are disturbing a patient, but it is with the unconscious mental forces that greater challenge is met. It has been recognized that in the peptic ulcer patient there is usually a typical conflict situation which frequently results in a personality type. This conflict is between dependency and independency.

One of the earliest experiences of a baby is that of being fed. At this time he is truly a parasite. He is in a state of emotional receptivity and he is conditioning the reflexes of association between nutrition and maternal love. The baby is most certainly dependent. As he grows to manhood he still has need for this so-called maternal love, a term which in the broader sense includes affection, emotional support, or help from others. Maternal love is required in variable amounts depending on the individual's early life experiences in this area. Adult expressions signifying the need of this maternal love may be either in direct or sublimated forms. Direct expressions may be exhibited as an overdeveloped need for affection, approval, or love, while the sublimated types may be expressed as the need for power, recognition, or fame.

If the adult basic needs are not satisfied there may be regression to the infant or early stages of emotional life. This represents the beginning of conflict between dependency and independency. Infant dependency in the adult is not tolerated by society, and an adult so disturbed is often unconsciously resentful and frightened by the idea of receiving satisfaction of infantile needs. Therefore, he takes on adult tendencies in large doses in order to compensate for his overdependent needs. He becomes authoritative, overambitious and domineering, all of which tend to make him feel better, since he is asserting independence. However, in spite of this outward appearance of power, he is actually repressing unsatisfied basic needs and this results in a disturbance of stability and homeostasis.

Because of the early pattern associated with his emotional response to feeding as an infant, the autonomic nervous system responds in such a way as to prepare his stomach for food—namely, by hypersecretion and increased motility. This persistent psychic stimulation of the subcortical centers can, through the autonomic nervous system, produce local functional disturbances that may be followed by ulcer formation.

CONCLUSION

We have been discussing the etiology and genesis of one of the common diseases of the gastrointestinal tract which is usually diagnosed without difficulty. Gastric and duodenal ulcer have been spoken of almost interchangeably because of their close resemblance etiologically and genetically.

The autonomic nervous system has been described briefly from its anatomical aspects. The pathologic physiology, however, was considered in more detail because it is my opinion that imbalance in the autonomic nervous system is alway present in peptic ulcer. Some of the causative factors of autonomic imbalance, such as disturbance of electrolyte equilibrium and of the organs of internal secretion, were mentioned. The relation of the osteopathic somatic lesion to peptic ulcer was also emphasized as a causative factor. Vertebral lesions often so affect the sympathetic and parasympathetic innervation of the stomach as to produce hyperemia, hypersecretion, and hypermotility, which may result in ulcer. Conflict arising out of an individual's needs for dependence and independence was cited as an example of an emotional disturbance which can terminate in autonomic imbalance and concomitant physiological changes.

It should now be apparent that peptic ulcer is the end-result of the interaction of various factors,

any combination of which may react to account for its etiology. The primary concern of the osteopathic internist should be to evaluate the patient not only by technical diagnostic procedures but also from his life situations, interpersonal relations, and structural constitution. Through a broader understanding of the somatic and psychic etiological factors of peptic ulcer a more rational approach to the management of this disease is made possible.

460 Staten Ave.

REFERENCES

1. Anders, J. M.: Textbook of practice of medicine. Ed. 7. W. B. Saunders Co., Philadelphia, 1906.

2. Best, C. H., and Taylor, N. B.: Physiological basis of medical practice. Ed. 5. Williams & Wilkins Co., Baltimore, 1950.

3. Robuck, S. V.: The relation of the osteopathic somatic lesion to visceral pathology: The A. D. Becker Memorial Address, 1950. J. Am. Osteop. A. 50:321-324, Feb. 1951.

4. Chaput, Y.: New aspects of the problem of gastric and duodenal ulcers; etiology and treatment. Union Méd. du Canada. 72:274-280, March 1943.

5. Wolf, S. G., and Wolff, H. G.: Human gastric function. Oxford University Press, New York, 1943.

ADDITIONAL REFERENCES

Alexander, F.: Fundamentals of psychoanalysis. W. W. Norton & Co., New York, 1948.

Dunbar, H. F.: Synopsis of psychosomatic diagnosis and treatment. C. V. Mosby Co., St. Louis, 1948.

Held, I. W., and Goldbloom, A. A.: Peptic ulcer: Its diagnosis and treatment. Charles C Thomas, Springfield, Ill., 1946.

Kantor, J. L., and Kasich, A. M.: Handbook of digestive diseases. Ed. 2. C. V. Mosby Co., St. Louis, 1949.

Krieg, W. J. S.: Functional neuroanatomy. Blakiston Co., Philadelphia, 1942.

Kuntz, A.: The autonomic nervous system. Lea & Febiger, Philadelphia, 1934.

McCombs, R. P.: Internal medicine in general practice. Ed. 1. W. B. Saunders Co., Philadelphia, 1944.

Weiss, E., and English, O. S.: Psychosomatic medicine. W. B. Saunders Co., Philadelphia, 1943.

Year Book of Medicine, 1951. Year Book Publishing Co., Chicago, 1951, pp. 544-546.

Zeligs, M. A.: Psychosomatic considerations of gastric disease. California Med., 67:368-370, Dec. 1947.

Pangamic Acid (Vitamin B_{15}) in Heart Disease

Preliminary Report of Ten Cases*

A. L. PETTIGREW, D.O.

Assistant Clinical Professor of General Medicine
College of Osteopathic Physicians and Surgeons, Los Angeles
Long Beach, Calif.

Pangamic acid is a water-soluble accessory food factor first isolated in crystalline form by Krebs and Krebs from rice bran and polish and tentatively designated vitamin B_{15}; later they isolated the same substance from ox blood and horse liver. Like all other water-soluble members of the vitamin B complex, pangamic acid is apparently without toxicity in therapeutic or prophylactic doses, parenterally or orally administered.

Chemically it is described as a secondary amine of a hexuronic acid, and its synthesis reportedly has recently been achieved.

Physiologically pangamic acid is believed to comprise the prosthetic group of one of the cellular biocatalysts involved in the oxygen uptake or respiration of the cell. Accordingly, its clinical rationale appears to derive from the ability of the agent to facilitate cellular respiration in those diseases typified by histiotoxic or anoxic anoxia.

The possible clinical utility of pangamic acid in cardiac disease was first described in a preliminary paper by Krebs, Krebs, Beard, Malin, Harris, and Bartlett in January, 1951.[1]

The present study was commenced with material distributed, under the statutory provisions of the Food and Drug Act of 1938, as part of a clinical investigational program of pangamic acid; it is based solely on the author's personal observations and studies and does not necessarily reflect the consensus of other investigational groups.

*Presented at the annual meeting of the American College of Osteopathic Internists, Des Moines, Iowa, October 31, 1951.

Whenever possible in the following series, careful controls have been run. These have consisted preliminarily of placebos administered during the course of therapy. The administration of such placebos has usually been followed by a relatively prompt and completely voluntary statement by the patient of decreased or lost efficacy of the "drug."

While it is not possible to derive from a relatively heterogenous series of ten cases clinical evidence of a conclusive or final nature on the value of pangamic acid in this area, it is believed that the findings reported in this paper are highly suggestive and a clear justification for continuing study of the problem.

CASE REPORTS

Case 1. T.J.O., male, white, typewriter mechanic, aged 56, height 5 feet 6 inches, weight 145 pounds, was first seen April 21, 1948, complaining of dyspnea and severe chest pain upon exertion. The patient described a progressive worsening of his condition, an inability to work, and a growing need for bed rest. Physical examination disclosed blood pressure 140/40, apex and radial beats equal with a pulse rate of 66, loud diastolic murmur over aortic area, left ventricular hypertrophy, and aortic widening. Both lung bases were moist.

Electrocardiogram showed left axis shift, inverted T-2 and P-R interval of 0.2 seconds. Significant laboratory data included positive Kahn, Hinton, and Wasserman tests and 1+ albumin in the urine with occasional red blood cells and granular casts. Total blood proteins were normal and the hematology was not remarkable.

Clinical diagnosis was as follows: Etiologic, syphilis; anatomic, cardiac enlargement with involvement of coronary ostia; physiologic, normal sinus rhythm, anginal syndrome, congestive heart failure; functional classification, 2.†

The patient responded fairly well to aminophylline, digitalis, and rest. Morphine sulfate, ½ grain (with atropine sulfate, 1/100 grain) was used when pain became severe. Oxygen was necessary at times. One year following the initial examination, an acute, suppurative appendix was successfully removed. Two months later the anginal pain became much more severe and the patient was bedridden a greater part of the time. Nitroglycerin was effective and approximately twenty-four tablets of 1/100 grain were used each 24 hours. Morphine was frequently administered for relief of pain and dyspnea.

In August, 1950, treatment with vitamin B_{15} (pangamic acid sodium) was started with 5 mg. intragluteally, three times a week. After 2 weeks the anginal pain was less severe and the patient was taking fewer nitroglycerin tablets; he was able to walk about the house with very little distress. Dyspnea also decreased while urinary output increased. On September 1, 1950, the patient was given 10 mg. of B_{15} orally, three times a day and the injections were reduced to twice a week. Nitroglycerin was necessary only four or five times a day at this time, in contrast to a previous necessity of twenty-four times a day. Improvement was steady and on February 1, 1951, the injections were discontinued completely, and vitamin B_{15} administered orally; morphine was used but once.

Placebos were substituted for B_{15} for 1 week beginning March, 1951, and the patient resorted to the use of more nitroglycerin. The anginal pain became definitely more severe when B_{15} was discontinued. At the present writing, August, 1951, the patient is working 4 hours daily and has had little anginal pain. There has been no change in the electrocardiogram and the blood pressure remains practically the same. The laboratory data are essentially unchanged. At present, the patient is taking 1 cat unit of digitalis daily and 10 mg. of vitamin B_{15} three times a day.

Case 2. L.R., married female, white, aged 65, height 5 feet 6 inches, weight 140 pounds, was first examined May 10, 1950, with chief complaint of pain in chest radiating to left jaw, arm, and wrist. The pain was evoked by breathing cold damp air. The symptoms were first noted 3 years earlier and had gradually become worse. An attack thought to be an acute coronary artery occlusion was treated in April, 1949, by another physician. At this time the patient remained in bed for about 3 months.

Therapy at this time included oxygen inhalation and the use of morphine periodically for pain. Nitroglycerin was effective, and four to six tablets were used every 24 hours. When first seen, the patient was depressed and emotionally unstable.

Physical examination disclosed a grade I systolic murmur over the apex, 6½ inches to the left of the midsternal line, pulse rate 86, and lungs negative. The electrocardiogram exhibited a definite left axis shift, inverted T-1 and depressed S-T-2; CF-2 and CF-4 inverted T. These findings were compatible with an old anterior lateral infarct.

Clinical diagnosis was as follows: Etiologic, arteriosclerosis and hypertension; anatomic, cardiac hypertrophy and coronary arteriosclerosis; physiologic, normal sinus rhythm and anginal syndrome; functional classification, 2.

Vitamin B_{15} therapy was started October 23, 1950, with 5 mg. intragluteally three times a week for 4 weeks. There was no improvement until the third week, at which time the patient stated that she was "cutting down" on her nitroglycerin. She was more active and also stated that her color had improved. At this time 10 mg. of B_{15} was started orally three times a day after meals. Following 2 weeks of the oral preparation, the patient reported a feeling of well-being and that her pain was not nearly so severe. Three weeks later, the parenteral preparation was discontinued and the patient continued to improve. There was a gain in weight and an improvement in appetite. Three months following the initiation of vitamin B_{15} therapy, the patient underwent an hemorrhoidectomy with little difficulty. After 4 days of hospitalization, she returned to her home and since has been on 20 mg. of B_{15} daily. It is only after a period of excitement or undue exertion that she resorts to nitroglycerin, and this occurs rarely.

The blood pressure dropped from 200/96 to 160/90 and has remained at this level since shortly after commencing B_{15} therapy. The pulse rate remains within normal limits; the electrocardiogram has changed but little and the frequency of premature ventricular contractions has decreased.

The patient is able to take care of her own housework, which includes cooking three meals a day for herself and her husband. At her last visit on May 12, 1951, she stated that she has felt better than at any time during the past 8 years. Her activities are still restricted, however. At present her medication includes 10 mg. of vitamin B_{15} orally, twice a day, and occasional Seconal capsule (1½ grains) at bedtime.

Case 3. H.D., male, white, a buyer for a large food market, aged 62, height 5 feet 9 inches, weight 170 pounds, was first seen July 5, 1950, complaining of chest pain following exertion; occasionally the pain would extend to the right arm and down to the finger tips. He had a posterior wall myocardial infarction 3 years previously, but he had been free of pain until 2 weeks prior to my first seeing him. His occupation required long hours and intensive concentration, but he could work only 3 or 4 hours until he was compelled to rest an hour in his office before he could continue with his duties. He stated that he was about to lose his position because of his inability to carry out his daily assignments. He resorted to nitroglycerin ten to twenty times each 24 hours. This afforded him only temporary relief.

Examination disclosed no dyspnea or other congestive failure signs or symptoms. Blood pressure was 140/90, pulse rate 86, and respirations 16. The electrocardiogram exhibited an old healed posterior wall infarction. The heart was enlarged a little to the left, and there was a grade I systolic murmur at the apex. No pretibial edema, petechiae, or other significant signs were observed. Laboratory findings were not remarkable, with the exception of a slight increase in the sedimentation rate. Blood chemistry was essentially normal.

†The functional classification of the cases in this series is based on the standard classification of the American Heart Association.

Clinical diagnosis was as follows: Etiologic, arteriosclerosis; anatomic, coronary artery sclerosis; physiologic, anginal syndrome; functional classification 2.

The patient was started on vitamin B_{15}, October 31, 1950, and 10 mg. were administered intragluteally twice a week. No other medication was given, except an occasional cathartic. After the second week, the patient reported a feeling of well-being and a decrease in anginal pain. He also stated that the need for nitroglycerin was somewhat reduced. At this time a total of 40 mg. of B_{15} was administered daily—three 10-mg. capsules and one 10-mg. intramuscular dose. After 4 more weeks the patient had decidedly improved. There was no essential change in the electrocardiogram or in laboratory findings. In another month he was able to work a full day without any rest whatever. He could walk long distances without any signs of the anginal syndrome, but excitement would produce twinges of pain in the retrosternal region. After a short period of rest pain would subside, and he could resume activities without too much difficulty. His color improved and he now states that he is becoming less tired and sleeps better, especially since the oral administration of vitamin B_{15}.

Parenteral administration was discontinued in February, 1951, and the oral preparation given three times a day. At the present time, the patient's blood pressure is 124/86 and the electrocardiogram remains unchanged. Placebos were given orally during March, 1951, and an increase of pain upon exertion was reported. Since resuming oral B_{15} progress has been quite satisfactory.

Case 4. E.L.M., married male, white, retired laborer, aged 70, height 5 feet 10 inches, weight 158 pounds, was first seen December 11, 1950, complaining of pain over the substernal region radiating to both arms, up both sides of the neck and to the region of the left jaw. The condition had its onset 10 years ago, but was gradually growing worse. Two years ago the patient was forced to stop work entirely.

The diagnosis of angina pectoris was independently confirmed on several occasions and the possibility of peptic ulcer was excluded on one occasion. The pain was evoked by exertion but not entirely relieved by rest. Whiskey gave the patient the greatest relief, though nitgroglycerin afforded some benefit. Some relief was also reported from testosterone therapy.

The patient was again seen in March, 1951, at which time he reported a pronounced substernal pain accompanied by profuse perspiration. Serial electrocardiograms disclosed no evidence of recent infarction. There was, however, a left axis shift and evidence of old myocardial damage. The blood pressure was 140/80 and the blood count showed a slight leukocytosis. The sedimentation rate was within normal limits and the nonprotein nitrogen was 66 mg. The Wassermann and Kahn tests were negative and the urine showed a 1+ albumin with an occasional granular cast.

After 2 weeks of bed rest, the progress of the patient was satisfactory. On April 1, 1951, vitamin B_{15} therapy was begun hypodermically, 10 mg. three times a week. Oral medication with B_{15} was also started.

At the present time, August, 1951, the patient has shown remarkable improvement; he has very little pain upon exertion and states that he has not felt better in 10 years.

Case 5. H.C., male, white, retired mining engineer, aged 72, height 5 feet 7 inches, weight 180 pounds, first consulted me on October 17, 1950, complaining of pain in the knee joints accompanied by swelling and pain in the chest which radiated to the left arm, the region of the jaw, and down the left arm to the wrist. When first seen the patient was dependent upon a cane for walking.

He reported having a goiter for 45 years and being advised repeatedly not to undergo surgery. The chest pain gradually became worse; it was evoked by exertion or excitement. Because of difficulty in walking, the patient was confined indoors most of the time. The chest pain was so intense that nitroglycerin was necessary 10 to 15 times daily. He was very discouraged. His medical and surgical history was not remarkable except for the long-standing goiter. Arthritis was first noticed 10 years ago and the anginal pain began 2 years prior to my first seeing the patient.

The blood pressure was 140/76, the heart was enlarged a little to the left, and a grade 1 systolic murmur was noted over the mitral region. Myocardial tone was good and the electrocardiogram was within normal limits. The basal metabolism rate was within the normal range and the nonprotein nitrogen was 56 mg. Blood sugar was 146 mg. Blood cholesterol was 215 mg. and the urine carried a 2+ albumin with an occasional red cell. The chest x-ray was essentially negative. Fluoroscopic examination disclosed a normal pulsation of the mediastinal vessels. There was no pulsation in the thyroid tumor. The knee joints were enlarged and painful; motion was limited. In a standing position, pain was intense. Physical examination was otherwise essentially negative. Symptomatic care included nitroglycerin for relief of pain plus medication and physiotherapy for relief of the pain of the arthritis. Pain from both arthritis and anginal syndrome did not subside in response to standard therapy.

On October 12, 1950, vitamin B_{15} injections of 10 mg. twice weekly, and oral medication of 10 mg. twice daily were started. In about 3 weeks the patient experienced relief from the anginal pain. His doses of nitroglycerin were less frequent and he could walk quite a distance without the usual distress. It was not until April, 1951, that he experienced relief from the joint pain. The same regimen was continued and at the present time the patient is walking about the house without a cane. Pain is reduced and motility has increased in the knee joints. There is no change in the x-ray film of the hypertrophic arthritis. The patient is much encouraged because the chest distress has lessened, and the relief of pain in joints also has afforded him a great deal of comfort.‡

Case 6. L.D., male, white, retired oil producer, aged 57, height 6 feet, weight 215, was first seen by me in October, 1950. His previous history included two attacks of acute coronary artery thrombosis, the first being a posterior lateral infarction 5 years earlier, and the second an anterior wall infarction 2 years prior to my seeing the patient. Prior to the first coronary occlusion, his history was essentially negative with the exception of childhood diseases. He had been a hard worker all of his life, he stated. Follow-

‡It may be noted that Krebs *et al.*[1] in their preliminary paper describe a definite antirheumatic effect for vitamin B_{15}.

ing the second coronary occlusion a very severe type of anginal pain persisted. Pain radiated to the region of the left jaw and down both arms. The breathing of cold air exaggerated the condition. The patient was fearful of exertion. He was discouraged, morose, and addicted to the use of alcohol, which relieved his pain; nitroglycerin was almost ineffective. The latter had not been used for 4 months prior to my seeing the patient.

Physical examination disclosed a heart enlarged in all diameters but with mediastinal vessels pulsating normally, eyegrounds that were compatible with arteriosclerosis, and a grade II mitral systolic murmur with an occasional premature ventricular contraction. The chest x-ray disclosed an enlarged heart but lung fields were negative. The electrocardiogram disclosed old myocardial damage, suggestive of an old anterior wall infarction. The basal metabolism was —26. The nonprotein nitrogen was 43 mg., blood sugar 138 mg., blood cholesterol within normal limits, and blood urea nitrogen 36. The urine carried a 1+ albumin with occasional blood and pus cells. Blood pressure was 200/100.

Clinical diagnosis was as follows: Etiologic, arteriosclerosis of coronary arteries, and old infarction of the myocardium; physiologic, normal sinus rhythm and anginal syndrome; functional classification, 3.

This patient was started on vitamin B_{15}, December 10, 1950, and was given 5 mg. three times weekly, intragluteally, and 10 mg. orally three times daily. All other medication was stopped, except the whiskey which the patient continued to take in small amounts frequently for the relief of pain. Three weeks later he had the first relief in several months, he stated. The whiskey was discontinued after another 2 weeks and the patient has been comparatively free from pain until the present date, August 1, 1951.

After the second month of B_{15} therapy, he drove his car from his home to his office, where he worked about an hour a day. The only whiskey that is now taken is a drink before dinner. He adds that he has no desire for alcohol so long as he is free from chest pains. Placebos were given for 1 week in the middle of March, 1950, and the pain increased slightly, at which time he resorted to more whiskey than usual. At the present time, the patient is able to walk without pain but undue excitement or emotional stress evokes pain, though of a lessened intensity than before. The blood pressure is now 190/94. The pulse rate is still within normal limits.

Case 7. M.G., male, white, a bakery worker, aged 65, height 5 feet 6 inches, weight 164 pounds, was first seen October 17, 1950, with the complaint of pain in both arms, wrists, fingers, and chest. Following very heavy work, the patient stated that the pain was very severe and radiated to the left scapula. The chest pain was first noted 8 months prior to the patient's visit. It gradually grew worse and the patient had to discontinue his work 2 weeks prior to seeking medical care.

Except for an appendectomy 20 years ago, the medical history was essentially negative. The temperature, pulse, and respiration were within normal limits and blood pressure was 140/86. The fluoroscope revealed a heart enlarged slightly to the left. There was a grade II systolic murmur over the apex. The mediastinal vessels pulsated normally. The lungs were clear by both physical examination and x-ray. No petechiae were noted. Other physical findings were essentially negative. The nonprotein nitrogen was elevated to 42 mg. Blood sugar and other blood chemistry were within normal limits. The electrocardiogram showed a slight left axis shift and a premature auricular contraction.

Previous medication comprised nitroglycerin, ten to fifteen tablets a day, Seconal 1½ grains for rest at bedtime and papaverine hydrochloride, hypodermically in 1-grain doses every 6 hours for varying periods of time. The intramuscular administration of 5 mg. of vitamin B_{15}, three times weekly plus the daily administration of 30 mg. of the oral preparation was commenced. Within 9 days the patient reported that he was taking less nitroglycerin and did not resort to medication for rest at night. He was advised not to resume work and to take adequate rest at home. He was put on a low calorie diet at this time. His anxiety seemed to be relieved. After 2 months of treatment, the intramuscular injections of B_{15} were discontinued but two daily doses of 10 mg. of the oral preparation were continued. At the present time, the patient is considering returning to work, but to a less strenuous job. His chest pain has decreased impressively and he can walk several blocks without any distress whatever. He is taking nitroglycerin only occasionally.

Case 8. H.W., female, white, housewife, aged 52, height 5 feet 3 inches, weight 130 pounds. This patient suffered an acute coronary occlusion on October 15, 1949. This attack was preceded by substernal pain, radiating to the left arm and the anterior surface of the neck, and it occurred with progressively increasing frequency and severity. She suffered cardiac arrest for a brief period on one occasion. For supportive care, the patient was using aminophylline, morphine, and nitroglycerin. Her complaint was frequent attacks of chest and left arm pain. Physical examination revealed blood pressure 150/90 and slight left ventricular enlargement. The electrocardiogram disclosed evidence of old anterior wall damage. Other laboratory tests revealed nothing of significance.

Clinical diagnosis was as follows: Etiologic, arteriosclerosis; anatomic, cardiac enlargement and old anterior infarction; physiologic, anginal syndrome; functional classification, 2.

On December 1, 1950, vitamin B_{15} therapy was started, 5 mg. intramuscularly every other day and 10 mg. orally, twice daily. Prior to this treatment, the patient had been bedfast for approximately 1 year. Since the beginning of B_{15} therapy, she reported nitroglycerin has been seldom needed. In the patient's own words, "the drug has proved miraculous."

Case 9. G.S., female, housewife, aged 64, height 5 feet 4 inches, weight 140 pounds, was first seen August 10, 1950, complaining of dyspnea upon exertion, chest pain radiating to the back, and extreme nervousness. The pain was related to exertion but frequently came on during sleep. There was a history of slight swelling of the ankles. There was a questionable rheumatic fever history at 6 years of age. She stated that she had had a series of sixteen electric shock treatments for "nervousness." Other medical and surgical history was not significant. Blood pressure was 180/100. Apex and radial rate was 96, respirations 22, temperature 97.8. There were grade I systolic and diastolic murmurs over the aortic and mitral areas. The liver was slightly enlarged and the spleen could be felt.

Positive laboratory findings included 1+ albumin, nonprotein nitrogen 52 mg., blood cholesterol 345 mg. and basal metabolic rate +11. Chest x-ray showed the heart enlarged in all diameters. Electrocardiogram showed a left axis shift.

Clinical diagnosis was as follows: Etiologic, hypertension and rheumatic heart disease (inactive); anatomic, cardiac hypertrophy, mitral stenosis, and regurgitation; physiologic, congestive heart failure; functional classification, 3.

The patient was put at complete bed rest. She was digitalized with whole leaf digitalis, and 5 mg. vitamin B_{15} four times daily was started. In a short time the breathing became easier, edema lessened, and chest pains became less frequent. In 2 weeks after initiation of this therapy, the patient was able to walk about the house with very little dyspnea. When placebos replaced B_{15} the patient thought her chest pains more severe. Because of a neurotic tendency, it is difficult to determine whether or not B_{15} has been of value. At present, 1 year after institution of B_{15}, the patient occasionally resorts to the use of nitroglycerin for anginal pain. She is continuing with 20 mg. of B_{15} daily.

Case 10. J.P.N., married male, electrician, aged 53, height 5 feet 11½ inches, weight 174 pounds, was first seen September 10, 1950, complaining only of chest pain. Exertion and breathing of cold air, especially in damp and foggy weather, brought about pain. The onset of the attacks was 12 years previous to his first visit to my office. Whiskey and nitroglycerin gave effective relief. The patient had two or three attacks daily but the pain was gradually becoming more severe; the duration of attacks was from ½ to 2 minutes. The blood pressure was 130/76, and apex and radial rate were equal and regular at 76. Other physical findings were entirely negative. The laboratory data were not remarkable and both the electrocardiogram and x-ray studies of the chest revealed nothing of significance. This case represents one of an anginal syndrome with no positive physical or laboratory findings to justify a diagnosis of coronary artery disease. Transitory periods of myocardial anoxia apparently took place under various circumstances, decreasing the circulatory efficiency of the myocardium. Vitamin B_{15} was started September 15, 1950, 10 mg. intramuscularly, twice a week, and 15 mg. by mouth three times daily. No improvement was noted until January, 1951, at which time the patient used fewer nitroglycerin tablets. Shortly thereafter his work became less strenuous and the attacks still less frequent. The injections were discontinued February, 1951, and patient was given 5 mg. of B_{15} four times a day.

During the month of June, 1951, the patient was given placebos; he reported that the anginal pain was about the same but that he felt more tired during this period. Generally, I feel that J.P.N. has shown some improvement but because of the decrease in physical labor as well as fewer worries and less tension, it is difficult to evaluate the efficacy of vitamin B_{15} in this case.

COMMENT

In its importance to the maintenance of cardiovascular integrity, pangamic acid is not unique among the water-soluble vitamins. The beriberi heart is found in about 30 per cent of all cases of thiamine deficiency that eventuate in beriberi, and the mortality in this cardiopathy is in excess of 30 per cent. Thiamine comprises the prosthetic group of a respiratory enzyme called cocarboxylase or thiamine pyrophosphate. In thiamine deficiency, there is insufficient cocarboxylase to remove such intermediate products of carbohydrate metabolism as lactic and pyruvic acids, and with their accumulation the beriberi syndrome develops.

Niacin also comprises the prosthesis of a respiratory enzyme, cozymase I, as riboflavin does that of the "Atmungsferment" of Warburg. Vitamin C enters into another indispensable respiratory enzyme system. A deficiency in any of these vitamins may be reflected in cardiac pathology.

The position of vitamin B_{15} or pangamic acid in the chain of respiratory enzymes has not yet been determined with the precision that characterized that, for example, of thiamine. The findings reported here for vitamin B_{15} therapy are not intended to minimize the indispensable role that so many other accessory food factors also play in cardiac physiology. However, for purposes of evaluating vitamin B_{15}, the present studies necessarily had to exclude therapeutic doses of other vitamins. There is, for example, nothing to suggest that vitamin B_{15} could replace vitamin B_1 in the beriberi heart.

There is a growing literature on the relation of inositol, choline, and the lipotropic pancreatic factors to cardiovascular physiology. The consideration of these factors is not to be overlooked in emphasis on vitamin B_{15}. An adequacy of all accessory food factors is required in the management of every cardiac patient. Vitamin B_{12}, folic acid, and related antianemics play an obviously important part. Supplementary to them are the minerals and trace elements. And ever present is the subject of general diet.

Our efforts in cardiac therapy then must comprise a physiologically integrated movement toward a clear and definite goal: enhancement of oxygen uptake. And there are three basic means to achieve this: (1) increase the coronary inflow, (2) increase the oxygen-carrying capacity of the blood, and (3) increase the cardiac utilization of available oxygen. Vitamin B_{15} and the other respiratory enzymes or vitamins accomplish the third task. Vitamin B_{12}, folic acid, liver extract, iron, and copper accomplish the second. The anticoagulants often contribute crucially to the first task. The contribution that the emergency administration of oxygen makes to these mechanisms is obvious. In what might be crudely called a cyclic fashion, all three means of achieving internal respiration reinforce and augment each other. The scope of their interrelatedness is, of course, beyond this paper.

In conclusion, it is interesting to note that emphasis has been placed on the principle of the enhancement of oxygen uptake in what is basically but a more explicit statement of an axiom known to us all. "The rule of the artery is supreme."

SUMMARY

Pangamic acid or vitamin B_{15} is a newly discovered water-soluble vitamin with apparent usefulness in the therapy of cardiovascular diseases. This usefulness is ascribed to the enhancement of oxygen uptake by cardiac and other tissues. The use of the vitamin in ten cases of heart disease is described.

4310 Atlantic Ave.

REFERENCE

1. Krebs, E. T., *et al.*: Pangamic acid sodium, newly isolated water-soluble factor; preliminary report. International Rec. Med. 164:18-23, Jan. 1951.

Preservation of Body Fluids*

MAXWELL R. BROTHERS, D.O.
Los Angeles

The utilization of water and electrolyte solutions and blood and blood substitutes has probably enabled the physician to save more lives than any other mode of therapy, with the possible exception of the antibiotics. Understanding water and electrolyte balance will aid the physician in selecting the proper infusion substance to correct spontaneous or induced imbalance. It must be borne in mind that the body under stress will sacrifice volume in order to maintain relatively normal electrolyte balance but will alter this balance in order to maintain normal osmolar relationships. There is a limit to which compensation occurs, and when this limit is reached, serious consequences may ensue.

Water and sodium are intimately related in the extracellular fluid. Water and potassium play a like role in the intracellular fluid. The chloride and bicarbonate ions tend to vary in accordance with the available base and water, and through this relationship, alterations in their concentration are manifested according to the primary cause of the disturbance.

In the presence of water deficiency it is necessary to determine whether the dehydration is primary due to water loss, secondary due to salt depletion, or is due to a combination of the two causes with loss of both intracellular and extracellular water and electrolytes. In severe dehydration approximately 30 per cent of the extracellular fluid may be lost.

In evaluating the patient the usual laboratory findings do not necessarily indicate the quantitative changes but rather the qualitative changes that have taken place, and in certain instances may be misleading unless the patient as a whole is considered. Water is by far the most important single factor in variations of body fluid and alteration of electrolyte balance. Because of the close relationship of water and sodium they must be correlated.

As there is no equation that will indicate the amount of water that a particular patient may need, evaluation should be determined clinically. In correction of dehydration an excess of 4,000 to 5,000 cc. per day is not usually indicated and may prove harmful. A good rule of thumb to follow in computing the amount of water to be given is to allow 1,000 cc. for insensible water loss, an amount equal to the previous day's 24-hour urine output, and additional fluid to offset the dehydration if present. If nasogastric suction is being used, an amount equal to the fluid lost from the gastrointestinal tract should be added to the quantity allowed to offset the insensible water loss and the previous day's urine output. All fluids should be given parenterally if the patient is unable to take them orally. The total amount should be evaluated in relation to the clinical picture, hematocrit reading, plasma protein level, urine flow, and specific gravity.

Normal saline is usually satisfactory for the replacement of extracellular fluid volume even though the ratio of chloride to sodium is higher than that found in extracellular fluid. The kidneys will excrete the excess chloride with cations other than sodium. If the kidneys are diseased, hyperchloremia will result. Under these conditions, if the patient is not alkalotic, a mixture of three parts normal saline solution with one part sodium lactate solution may be given. If the patient has an alkali deficit (acidosis) more sodium should be used. Repair of dehydration is usually carried out over 24 hours or longer. The total estimated amount of fluid is usually that needed to replace electrolytes plus 1,000 to 1,500 cc. The selection of fluids will depend on the electrolyte imbalance, source of fluid loss, and state of hydration.

In estimating the amount of sodium needed the entire body water should be considered because any change in the osmolarity of extracellular fluid will result in transcellular shifts of water to reestablish equilibrium. Relman and Schwartz[1] give the following method of calculating sodium requirements: "If 142 mEq. per liter is taken as the desired serum concentration then the required amount of sodium (A), expressed in milliequivalents, is given by the formula: $A=(142-P)\ (B)$, where P = the serum concentration of sodium in mEq./L. and B = total body water in liters. For the purpose of this formula, B may be taken as 60 per cent of the patient's ideal body weight, expressed in kilograms."

Where there is excessive intracellular fluid with normal total salt but with hyponatremia, as in water intoxication, there is an indication for hypertonic saline infusion or large quantities of serum albumin. It must be remembered that this may precipitate acute pulmonary congestion and require phlebotomy. If the patient's condition does not require correction urgently it is better treated by restricting fluid intake and allowing the insensible water loss to help equalize osmolar relationships. When hypertonic salt is used solutions will shift out of the cells and expand the extracellular fluid and may result in pulmonary edema and circulatory failure unless precaution is taken against their development. If the patient is not dehydrated but is hyponatremic the entire amount of sodium should be given in a minimal amount of water —100 cc. of 5 per cent sodium chloride contains 86 milliequivalents of sodium. However the injection or administration of water following this treatment nullifies the result and may lead to dangerous hydremia. For this reason additional fluids should be restricted for 24 hours.

In dehydrated states, usually in addition to water and sodium imbalance there is alteration of other electrolytes. Here the indications for selection of fluids depends on whether there is an alkalotic or acidotic state, the degree of dehydration, and urgency of replacement. Ringer's solution and Hartmann's solution are well tolerated and buffered so that needed substances are made available along with water. The excess is excreted by the kidneys.

Metabolic acidosis, which comprises the vast majority of acid-base disturbances, may be due to: (1) Alkali loss from diarrhea, fistulous tracts, etc.,

*Presented at the meeting of the American College of Osteopathic Internists, Des Moines, Iowa, Oct. 31, 1951.

or (2) acidosis due to acid retention as in diabetic coma and starvation. For all practical purposes they are not sharply demarcated, and are usually coexistent when the CO_2 combining power has seriously declined. Both are usually associated with dehydration. In either the aim of therapy is to replace available alkali to counteract the acidosis and water to correct the dehydration. As most of the conditions leading to this state are associated with a relative excess chloride and diminished bicarbonate, a balanced buffered solution is the one of choice. This may be made up of mixtures of sodium chloride and/or soda bicarbonate and sodium lactate solutions as previously mentioned or by using Ringer's lactate or Hartmann's solution to supply an excess alkali with minimum chloride. Sodium lactate contains a strong alkali and weak acid. The acid, being organic, is metabolized by the liver to release large quantities of sodium.

In severe acidosis the average dose of 1/6 molar sodium lactate is 60 cc. per kilogram of body weight or about 4,000 cc. for a patient weighing 150 pounds. If acidosis is extremely severe the dose should be increased to 90 cc. per kilogram of body weight. For children it is recommended that half the dose be given intravenously and the remainder subcutaneously or intraperitoneally. If mild acidosis is present about 30 cc. per kilogram is adequate. If the CO_2 combining power is known, 1/6 molar sodium lactate may be estimated from the following formula:

Dose in cc. = (60 — plasma CO_2) × (0.8 times body weight in lbs.).

It has been my experience in most ketone acidotic states that administration of 1,000 cc. of 1/6 molar sodium lactate as an initial dose followed by normal saline solutions with or without 5 per cent glucose is usually adequate. When urine output is well established, Ringer's lactate (Hartmann's solution, containing sodium chloride, 6 grams; sodium lactate, 3 grams; potassium chloride, 0.3 grams; and calcium chloride, 0.2 grams per liter) is given for additional fluid and sodium and for prophylaxis against potassium deficit. If dehydration is prolonged and the patient can not take oral feedings 1,000 cc. of 0.2 per cent potassium chloride solution with or without 5 per cent glucose will insure adequate safeguard against hypokaliemia in most patients. It should not be used until dehydration has been treated and there is an adequate urinary output.

Darrow's solution, containing potassium chloride, 2.71 grams per liter; sodium chloride, 3 grams per liter; and sodium lactate, 6 grams per liter, may be used in dehydrated acidotic states but should not be used until adequate renal function is established. It is contraindicated in patients with high serum potassium levels, impaired renal excretion, pre-existing heart block, and Addison's disease.

Metabolic alkalosis may be produced by alkali retention or acid loss. The former is usually the result of excessive intake of alkali by mouth or parenterally, especially when renal function is impaired. It may be brought about by excess administration of sodium lactate solution resulting in rapid disposal of the lactate with sodium retention. Sodium is slowly excreted by the kidneys and an excess will result. The alkalotic state, however, is usually the result of excess chloride loss with resultant alkali excess. This is by far the most frequent etiology because of its association with gastric secretions and vomiting. In the presence of normal renal function, normal saline solution is adequate as the excess sodium will be excreted in the urine. However, if alkalosis is severe a solution of 0.9 per cent ammonium chloride solution is available. This, however, should be used with great caution unless accurate chemical data are available (chloride or CO_2 combining power). It should be administered at a rate not to exceed 5 cc. per minute. Dosage is based on 20 cc. per kilogram of body weight and its effect may be manifest for several days.

Where there is marked dehydration the ammonium chloride solution should be incorporated with normal saline, Ringer's solution, or dextrose solution to avoid further dehydration and insure adequate urinary excretion. Toxicity is apparently due to rate of administration and the ammonium salt rather than excess chloride.

It must be remembered that in alkalotic states as well as in acidotic states hypokaliemia may develop and adequate therapy must be instituted. Potassium, which has a relationship to intracellular water similar to that which sodium has to extracellular water, will vary in its concentration with variation in fluid balance. It moves about in accord with demands of shifting membrane equilibrium, especially in acid-base disturbances.

In acute potassium deficit, therapy is urgent. However, in most cases with normal kidney function, it is better to institute prophylaxis than to allow acute deficit to develop. In chronic deficit, Martin and her coworkers,[2] who prefer a 0.1 or 0.2 per cent solution of potassium chloride for therapeutic or prophylactic use, have administered as much as 40 grams in a 2-day period. For recent acute deficit they recommend 3 gm. of potassium chloride intravenously each day in addition to the daily prophylactic dose of 3 to 6 grams. If there is a serious chronic deficit, as high as 10 to 20 grams may be administered in 24 hours, all intravenously or 10 grams intravenously and 10 grams orally. As soon as the patients are able to eat they will maintain themselves with normal dietary intake of 3 to 5 grams per day.

In acidotic coma, as soon as serious dehydration is corrected to the point that urine output is adequate, 2 to 4 grams of potassium chloride is given intravenously as a 0.1 or 0.2 per cent solution to the amount of 10 to 12 grams orally. Potassium may be given in the amount needed until the electrocardiogram reveals normal relationship or early peaking of T waves. In giving potassium solutions *it must be emphasized that* the rate of administration should be slow; 1 to 3 hours are needed to give 1,000 cc. of the solution.

In potassium excess, therapy is aimed at elimination of the salt and counteracting its effect on the heart. Calcium is antagonistic to potassium and counteracts its inhibitory effect; 10 to 20 cc. of 10 per cent calcium gluconate solution may be given slowly and repeated if necessary. Dextrose solutions due to their glycogenic effect carry potassium into the cells and thus lower serum potassium levels. Saline in some respects exerts an antagonistic effect on serum potassium levels but is best used with glucose solution.

In the past few years the use of protein hydrolysates to supply needed protein has become common practice. Hydrolysates should not be given parenterally if protein can be taken by mouth or tube feedings, and they should not be given in severe im-

pairment of renal or liver function, unless caution is exercised and the demand for protein is great. The indications for hydrolysates are in those disease states where oral or tube feeding is impractical or undesirable and where there is need for protein therapy. They should be used for their protein effect and not for caloric requirements. The latter should be supplied by glucose solutions or from body fat stores. One liter of protein hydrolysate contains nitrogen equivalent to 50 grams of protein. On the basis of 1 gram of protein per kilogram of body weight per day in the adult and 3 grams per kilogram in growing children a scale of administration of these solutions can be worked out. In some disease states and in some surgical patients, however, protein requirements may increase 2 or 3 times the normal, especially where lesions of the upper gastrointestinal tract are involved. One or 2 liters per day should prove adequate to meet protein requirements if caloric requirements are adjusted with glucose solutions and utilization of body fat stores.

Administration of 1 liter of protein hydrolysate should be extended over a 2-hour period. Any undesirable side effect—such as febrile reaction, sensation of fullness in the head or headache, nausea and/or vomiting, or pain at site of injection—indicate cessation or slowing of administration. Correction of protein deficit should be carried out over a period of several days, with concurrent administration of glucose solutions and other electrolytes if indicated, until there is a cessation of weight loss or an increase in weight and strength. It must be remembered that protein solutions are excellent culture media and strict aseptic technic should be exercised in their administration. Cloudy solutions should be discarded.

Glucose and glucose with alcohol are used primarily to meet caloric requirements although, in addition, alcohol has a sedative effect. Alcohol solutions should not be given to patients with hepatic or renal disease and should be avoided in epileptics and in patients with acute infections of the urinary tract. Caution should also be exercised if opiates or phenobarbital have been administered as these drugs are synergistic with alcohol. Patients receiving alcohol should not be left alone as its effect may be unpredictable as with other hypnotic, sedative, and euphoric agents. Alcohol glucose solutions should not be used without insulin in diabetics. The physician using these solutions should be on the alert for potassium deficiency and promptly treat it if it occurs. Alcohol solutions are available as 5 per cent alcohol with 5 per cent glucose in normal saline and also as 5 per cent alcohol with 25 per cent dextrose in distilled water.

Replacement of vital fluids must of necessity include whole blood, plasma, albumin, and plasma substitutes. The choice of materials depends on the need for their use. Whole blood is indicated in shock due to hemorrhage, to restore and maintain volume; in anemia, if symptoms of oxygen want are developing; in leukopenia and thrombocytopenia; in prothrombin deficiency; in aplastic anemia; and in infectious diseases. Care should be exercised in cross matching, and type specific blood should be used if available. Fresh blood is preferable to stored and preserved blood in hemorrhagic states as the platelets are destroyed by the third day and prothrombin titer shows marked decrease by the tenth day.* When repeated transfusions are given, except, in extreme emergency, fresh blood should be drawn from the recipient at periodic intervals and checked for the presence of isoagglutinins resulting from isoimmunization. In acute blood loss or chronic repeated blood loss the hematocrit will give valuable information regarding replacements. Blood should be replaced on the basis of 100 cc. for each millimeter drop in the hematocrit below 43 mm. volume of packed red cells.

When giving blood transfusions using acid-citrate-dextrose solutions, some investigators advise against the use of glucose in water conjointly, as clumping may occur. Clumping does not occur if the glucose is given in normal saline or when blood is drawn into plain sodium citrate solution. The exact mechanism of the clumping tendency has not been established, but it may cause severe reactions in the recipient.

Plasma has been available in liquid form, frozen, or dried. The first two forms have been largely discontinued and replaced by the dried form as it is more stable, is easily administered, and retains the labile constituents. It is indicated in shock due to trauma and burns, in metabolic shock, in prothrombin deficiency, and in blood loss when whole blood is not available. It has the advantage of not requiring cross matching. In hypoproteinemia it will supply significant amounts of protein, but because of its high sodium content is not recommended in nephrosis as only half of the protein is the needed albumin fraction. All plasma preparations should come from healthy donors, be irradiated, dried under high vacuum, and sealed. Each unit is equivalent to 2 units of whole blood.

Red blood cell suspensions are available and are stable for long periods if kept in airtight containers. They are suspended in 100 cc. of 5 per cent dextrose in saline solution and reinjected. Their prime indication is in anemic patients, especially those with poor cardiac reserve who are not responsive to the usual medication for blood cell formation.

Normal serum albumin is valuable in hypoproteinemia with or without edema. It is a salt poor albumin fraction; 20 grams have the osmotic equivalent of 100 grams of citrated plasma but contains only 0.06 grams of sodium ion as compared to 0.42 grams in plasma. It may be given in conjunction with other parenteral fluids. When diluted with 100 cc. of normal saline or 5 per cent glucose it is approximately isotonic and iso-osmotic with citrated plasma. Recommendations are to dilute one vial containing 5 grams with 20 cc. of supplied diluent. It is administered at a rate not to exceed 2 cc. per minute on the basis of 1 cc. per pound of body weight per day. It is indicated in nephrosis, burns, shock, or any state of hypoproteinemia where albumin fraction is needed. The cost is generally prohibitive.

There are numerous manufacturers investigating suitable blood substitutes or plasma extenders. Of these most have been abandoned except dextran which is a polysaccharide produced by fermentation of sucrose. Its molecules are of large size which hold the fluid within the vessels for long periods. It has a low molecular weight and can pass through the glomerular membranes into the primary urine, temporarily increasing the colloidal osmotic pressure of urine and consequently hindering reabsorption of water from the tubules. Approximately 30 per cent

of the material may be lost in this manner; the remainder is thought to be excreted into the gastrointestinal tract.

Dextran has the advantage of being stable and can be stored indefinitely without refrigeration. It is cheap to produce as compared to plasma. It does not interfere with blood typing, and there is no danger of transmitting virus hepatitis. It is effective in maintaining blood volume for 6 hours and can be stockpiled for a national emergency. As yet there have been no undesirable side effects and it may be used in any condition requiring volume or correction of osmolar relationships. Recently it has been used as a 10 per cent solution in nephrosis with considerable reduction in the edema.

CONCLUSION

Not all types and mixtures of fluids suitable for replacement of vital body fluids have been discussed. However, a sufficient number have been considered to meet most situations confronting the physician.

3200 W. Sixth St.

REFERENCES

1. Relman, A. S., and Schwartz, W. B.: Recognition and management of sodium depletion. M. Clin. North America 35:1533-1542, Sept. 1951.

2. Martin, H. E., *et al.*: Etiology and treatment of serum potassium deficits. J. Am. M. A. 47:24-30, Sept. 1, 1951.

3. Year book of medicine. Year Book Publishers, Chicago, 1951, p. 528.

ADDITIONAL REFERENCES

Best, C. H., and Taylor, N. B.: The physiologic basis of medical practice. Ed. 5. Williams & Wilkins Co., Baltimore, 1950, pp. 16-39; 125-134.

Cantarow, A., and Trumper, M.: Clinical biochemistry. Ed. 4. W. B. Saunders Co., Philadelphia, 1949, pp. 220-259.

Harrison, T. R., ed.: Principles of internal medicine. Blakiston Co., Philadelphia, 1950, pp. 293-323.

Leard, S. E., and Freis, E. D.: Changes in the volume of plasma, interstitial and intracellular fluid spaces during hydration and dehydration in normal and edematous subjects. Am. J. Med. 7:647-654, Nov. 1949.

Trumper, M.: Pathologic physiology: Potassium. M. Clin. North America 35:893-906, May 1951.

Wintrobe, M. M.: Clinical hematology. Ed. 2. Lea & Febiger, Philadelphia, 1946, pp. 302-311.

Newer Antibiotics*

WILLIAM B. STRONG, D.O.
Brooklyn

The subject of the newer antibiotics is, as anyone knows who has attempted to keep up with the field, a staggering one. In a volume by Pratt and Dufrenoy[1] published in 1949, well over 150 different substances were listed and their action described. Many more have since been isolated. Many of these, of course, are either ineffective or so toxic as to be useless against pathogenic organisms in man. Many have been tested in vitro and not in vivo and most have still to be clinically proved. In order to limit the length of this paper I will arbitrarily select certain substances that are commercially available or are expected to be shortly. I will attempt briefly to survey some of the literature concerning such substances as polymyxin B or aerosporin, terramycin, neomycin, and bacitracin as they apply to the problem of internal medicine. I will not discuss the better known antibiotics—penicillin, aureomycin, chloramphenicol, and streptomycin.

POLYMYXIN (AEROSPORIN)

Polymyxin was isolated from the Bacillus polymyxa by Stansly, Shepherd, and White[2] and described by them in 1947. Polymyxins A, B, C, D, and E, which differ from each other in their content of amino acids and an unidentified fatty acid, have been isolated. The bacterial spectra of polymyxins B and E are similar. In vitro they show more activity than streptomycin against gram-negative organisms except the neisserian group.

Aerosporin, described by Ainsworth, Brown, and Brownlee[3] in 1947 and demonstrated to be a basic peptide in 1948 by Brownlee and Bushby,[4] is probably the same as polymyxin B although Pratt and Dufrenoy describe it as the same as polymyxin A. In experimental infections in mice polymyxin hydrochloride appeared to be five to ten times more effective than streptomycin against Klebsiella pneumoniae and Hemophilus influenzae.[5]

In the Brooke Army Medical Center it is reported that polymyxin B was effective clinically in salmonella, shigella, klebsiella, the coli aerogenes group, and pseudomonas infections. It was also found to be moderately effective against staphylococci and Brucella melitensis. Pulaski and his associate[6] used polymyxin B and E in urinary tract and wound infections. The cases they reported showed clinical response, but invariably nephrotoxicity and neurotoxicity developed.

Kagan[7] reported the case of a 13-month-old infant with meningitis caused by Hemophilus influenzae type B which was resistant in vitro to streptomycin and only slightly inhibited by Sulfadiazine but sensitive to polymyxin B hydrochloride. The infant was given 7 mg. (70,000 units) of polymyxin B in 1 cc. of isotonic sodium chloride intramuscularly every 4 hours. The first day it also was given 1 mg. (10,000 units) in 0.5 cc. isotonic sodium chloride intrathecally and 35,000 units by this route on succeeding days. The child was more toxic on the fourth day, but made rapid recovery thereafter.

Aerosporin was reported by Brownlee and Swift[8] to be highly effective against Hemophilus pertussis. However, Kaplan, Fisher, and Kohn[9] using only polymyxin B had poor results and severe toxic effects in eighty-four patients. It is the only antibiotic except neomycin which has been found to be effective against Pseudomonas aerogenes. It is both nephrotoxic and neurotoxic. Its nephrotoxicity in urinary infections is difficult to evaluate, but albuminuria, granular casts, low specific gravity, azotemia, drug fever, anorexia, and nausea have been known to develop after its use. Neurotoxicity is manifested by numbness and paresthesia about scalp and face. Occasionally vertigo may

*Presented at the meeting of the Eastern Study Group of the American College of Osteopathic Internists, Philadelphia, March, 1951.

develop. Pulaski and his coworkers[6] reported nephrotoxicity and ototoxicity with dizziness. Mild fever and subjective nervous symptoms have been observed. Pain at the site of injection has been noted. These toxic reactions are temporary and reversible in the therapeutic dose range. However, it is reported that the substance is not absorbed by the oral route and may have possibilities as a good intestinal antiseptic. The therapeutic intramuscular dose is considered to be 2 to 4 mg. per kilogram of body weight in divided doses. It is excreted less rapidly than penicillin and streptomycin.

TERRAMYCIN

The antibiotic that has received the most widespread attention of late is terramycin. It has been developed from a newly isolated actinomycete Streptomyces rimosus. Terramycin is extremely versatile in its application. It is rapidly absorbed from the intestinal tract and is also used topically, intravenously, and intramuscularly. This substance was announced by Finlay and his associates in January, 1950.[11] Since then extensive clinical observations have been made and much has been written about it. It is effective in vitro and vivo against a wide variety of organisms, for example, gram-negative enteric organisms, gram-positive cocci, rickettsiae, and parasitic organisms.

The substance has relatively low toxicity. No nephrotoxicity or neurotoxicity have been noted. Occasionally severe gastrointestinal symptoms—nausea, vomiting, diarrhea, and glossitis—are encountered. The use of milk as a vehicle seems to lessen the gastrointestinal side effects. I have had to discontinue the drug in 2 patients, both children, because of excessive vomiting and diarrhea. In reviewing 171 cases treated by the oral route, Caldwell and his coworkers[12] report a case of vertigo. Twenty-five per cent of the patients complained of one or more gastrointestinal symptoms although discontinuance of the antibiotic was required in only 7 instances. Similar effects were noted by Timpanelli, Huebner, and McDermott.[13] They reported that 54 per cent of patients treated had no toxic reactions, 25 per cent had mild symptoms, 11 per cent had moderate symptoms, 10 per cent had persistent vomiting and diarrhea usually necessitating discontinuance of the drug. In a comparison study reported by Welch,[14] terramycin, aureomycin, and chloramphenicol were found to produce significant blood concentrations on amounts as low as .25 gm. each 6 hours. Chloramphenicol is maintained in higher blood concentrations. Terramycin maintains better urine and stool concentrations and for this reason is effective in many types of urinary infections, that is, infections due to terramycin-sensitive organisms. In reporting 41 cases of urinary infection McKenzie and Nugent[15] remarked that it was their impression that this antibiotic is effective against the common urinary tract invaders. It had no effect against Bacillus proteus in many cases in the dosage in which it was given. This observation was borne out by King and his associates[16] who observed that in mixed infections where Proteus vulgaris was involved, although some improvement was noted, this organism could not be eliminated from the urine. Pseudomonas aeruginosa, Proteus vulgaris, and tubercle bacilli are terramycin-resistant organisms although some bacteriostatic action may be expected in some cases. Aerobacter aerogenes is particularly terramycin-sensitive. Since this antibiotic has no demonstrable nephrotoxic or neurotoxic attributes, great usefulness may be found in the field of long-standing organic disease or after radical surgery with ureteral transplants.[17]

Because terramycin is excreted in high concentration in the feces, it is apparently an effective preparation for bowel surgery. Patients receiving 4 gm. a day excreted terramycin in concentrations ranging from 320 to 2,506 micrograms per milliliter according to observations of Di Caprio and Rantz.[18] The development of terramycin-resistant organisms was not encountered in therapy, but bowel flora was supplanted by new types.

In the previously mentioned series of 171 cases reported by Caldwell and his associates[12] it was found that terramycin was effective in pneumococcic pneumonia, scarlet fever, gonorrhea, shigella dysentery, and streptococcic throat infections. Dowling and others[19] report that the response to terramycin therapy was excellent in five cases of scarlet fever. In these cases the temperature dropped below 100 F. in 24 hours. No hemolytic streptococci could be recovered from the throats in 3 days.

Using the antibiotic in six children infected by Shigella paradysenteriae, they found that it produced remarkably quick results with no recurrences. Stool cultures were negative in 48 hours. Remarkable results were also observed in acute gonorrhea. Lymphogranuloma and granuloma inguinale responded to large doses. Vincent's angina seems to respond well. There is considerable difference of opinion concerning the usefulness of terramycin in bacterial endocarditis. There have been failures reported in staphylococcic infections. In discussing the treatment of subacute bacterial endocarditis, it has been suggested that this antibiotic may be very useful because of its low toxicity.[20]

In brucellosis, Keefer[21] reports that his results were fair but that combined therapy might be more useful. The results in epidemic influenza are variable. Some observers feel that extremely good results have been obtained and an equal number feel that the reverse is true. More observation is necessary. The effect in vitro against the Hemophilus pertussis is excellent and in experimental infections it is therapeutically effective, but further clinical observation is necessary.[22] Very few cases have been reported to date.

Terramycin has a definite spirochetal effect.[21] Treponemata disappear from lesions in 24 to 48 hours. More time is necessary for proper appraisal of its usefulness in other luetic stages. Striking results have been reported in 2 cases of Rocky Mountain spotted fever and in one case of murine typhus fever. Most and van Assendelft,[23] using doses of 1 to 2 grams orally each day for 10 days in treating 22 patients infected with Entameba histolytica, showed excellent results. All stools were negative and remained so with one exception.

Preliminary studies with terramycin in such diseases as regional ileitis, ulcerative colitis, pemphigus, malaria, and trichinosis have been disappointing.[21] The effect on tuberculosis is doubtful. It seems to have some suppressive effect, but it is generally regarded as having much less effect than some of the other antibiotics; it is not so effective as streptomycin or dihydrostreptomycin.

Neomycin, said to be four times as effective as streptomycin in the treatment of tuberculosis—and three times as toxic, was isolated from Streptomyces fradiae. This was reported by Waksman and Lechevalier in 1949.[24] It has been found to be equally effective in vitro against streptomycin-resistant and streptomycin-susceptible strains of Mycobacterium tuberculosis.[25] Neomycin resistance is much slower in developing than streptomycin resistance. Waisbren and Spink[26] however, during the course of an investigation of neomycin therapy at the University of Minnesota Hospital reported seven cases of tuberculosis which failed to show improvement. Neomycin is reported to have shown some suppressive effect on tuberculosis, but to date streptomycin and para-aminosalicylic acid (PAS) are apparently the most effective medicaments.[27] On the other hand Waksman[28] states that neomycin therapy resulted in immediate lowering of the fever and a feeling of well-being in human tuberculosis. He also states that he has not seen any toxic effects under low dosage.

Carr and his coworkers[29] called attention to partial deafness which occurred between the fourth and sixth week of neomycin therapy and continued after its discontinuance. The neomycin used contained 200 units per mg. The dose varied from .25 to 1 gm. each 12 hours for 4 to 7 weeks. No toxicity was noted by Duncan[30] in reporting five cases of urinary infection resistant to all other therapy. After brief courses of neomycin, the urine was sterile. It is reported that neomycin is more effective than streptomycin in salmonella infections.[25]

In a group of infants with otitis media caused by Pseudomonas aerogenes, neomycin, administered locally and intramuscularly, was very effective.[31] Hobby and associates[32] found neomycin highly effective in mice infected with Klebsiella pneumoniae, Eberthella typhosus, Proteus vulgaris, Pseudomonas pyocyanea, and Streptococcus hemolyticus.

An adequate appraisal of neomycin has not yet been made. Further animal and clinical evaluation is necessary. The varying reports on toxicity suggest that all batches of the drug are not the same. In fact it has been suggested that there are three principles of the substance—A, B, and C—varying with their effectiveness—for example, neomycin C is fungicidal—and probably in their toxicity.[33]

BACITRACIN

For some years bacitracin, isolated from Tracy I strain of Bacillus subtilis, has been used as a topical antibacterial substance and more recently it has been used with some success by the parenteral route. Its systemic application was delayed because of nephrotoxicity. Recent clinical experimentation on 270 patients with pneumonia, cellulitis, deep and superficial abscesses, infected wounds, endocarditis, osteomyelitis, ulcers, brain abscesses, gangrene, carbuncles and furuncles, meningitis, ulcerative colitis, and actinomycosis in various institutions were collected and reported by Meleney and his associates.[34] They showed the following results: Excellent, 70; good, 107; questionable, 32; no effect, 61. Many of these were resistant to penicillin.

Teng[35] reported 13 cases of purulent meningitis treated with bacitracin over a 2-year period. Six cases of staphylococcic meningitis treated by the intrathecal or intraventricular route included a 6-weeks-old infant; 5 patients recovered and 1 died. Bacitracin dosage varied according to age; for example, a 65-year-old man received 25,000 units intramuscularly every 4 hours for 8 days and 5,000 units by intraventricular injection daily for 6 days. A 6-weeks-old infant received 400 units for each kilogram of body weight every 6 hours for 2 weeks and 500 units intraspinally twice a day for 8 days. Of 2 cases of streptococcic meningitis one died. A 6-months-old infant with pneumococcic meningitis recovered. Two patients with mixed infections died. Two patients with meningitis due to unidentified gram-positive cocci recovered with the use of combined penicillin, bacitracin, and streptomycin therapy. Teng points out that earlier preparations were nephrotoxic when given in intramuscular injections, but the present purified product can be safely given in doses of from 10,000 to 20,000 units at 6- to 8-hour intervals.

Six cases of amebiasis, reported by Meleney,[36] were treated by bacitracin given orally in doses of from 20,000 to 60,000 units every 6 hours. All showed symptomatic improvement and healing of ulcers was prompt, but in 30 per cent of cases amebae reappeared in the feces.[36] Bacitracin has been found by others to be efficient in 65 to 70 per cent of cases.[37] It should be pointed out that in accepting bacitracin the Council on Pharmacy and Chemistry of the American Medical Association stipulated that bacitracin must be applied locally only, that it must *never* be administered intramuscularly or intravenously, and that oral administration even in large quantities does not result in detectable blood levels.[38]

MYCOMYCIN AND VIOMYCIN

There are under observation at the present time two antibiotics that should be mentioned although neither is commercially available: they are mycomycin and viomycin.

Mycomycin was first isolated by Johnson[39] in 1946 from a moldlike actinomycete. It is practically colorless, odorless, and tasteless, with active antimycobacterial properties. It is active against a number of gram-positive and gram-negative bacteria and a few fungi. It is bacteriostatic in all probability rather than bactericidal. The development of neomycin and streptomycin resistance by mycobacteria does not affect the activity of mycomycin against these organisms.

The toxicity of this substance is quite low as tested in white mice. In vitro it is effective against Mycobacterium tuberculosis—human and bovine strains, Candida albicans, Staphylococcus aureus, Brucella abortus, Salmonella typhosa, Salmonella paratyphi, Salmonella schottmülleri, Bacillus mesentericus, and some others. The last named is used as the standard test organism.

Viomycin is produced by the actinomycete, Streptomyces punicus. It differs from other antibiotics in that it is relatively more active against mycobacteria than against other organisms. Viomycin is a strong organic base and forms neutral salts. It has a relatively low toxicity. Renal damage has been demonstrated in rats given daily dosages of 400 mg. per kilogram of body weight for 5 days. Ataxia and incoordination of gait have occurred in cats receiving 100 mg. per kilogram of body weight.[40] Ten patients observed by Werner and associates[41] show some toxic reactions. On the hydrochloride salt, 3 patients developed induration with pain at the site of injection. This did not occur with the sulfate salt. Two patients

developed eosinophilia during 3 weeks of therapy, but it subsided when therapy was discontinued.

Nine patients showed renal damage as evidenced by the presence of casts, erythrocytes and leukocytes, and albumin in the urine. Elevation of blood urea nitrogen was noted in 4 patients. Some disturbance in electrolyte balance was seen in 5 patients as hypokalemia, hypocalcemia, hypophosphatemia, and hypochloremia, and an increase of CO_2 combining power. Minor hypersensitivity reactions were noted in 3 patients, partial deafness in 2 patients, and impairment of vestibular function in 3 patients.

In this group of patients resistance to viomycin developed in the strains of Mycobacterium tuberculosis with which they were infected. The substance seems to be effective against streptomycin-sensitive and streptomycin-resistant strains of tubercle bacilli. Viomycin demonstrated ability to control in mice experimental infections with Eberthella typhosa, Proteus vulgaris, and Klebsiella pneumoniae.[42]

COMBINED THERAPY

There is a growing tendency to utilize combinations of antibiotic chemotherapeutic substances. This has been an extremely worthwhile therapy in a number of instances. Combinations of sulfonamides were therapeutically more effective and better borne than such drugs separately. Such therapy has been difficult to evaluate, as Kirby[43] remarks. This point is exemplified in the use of the combination of sulfonamides and penicillin in pneumococcic pneumonias because of the effectiveness of each of them.

Streptomycin and para-aminosalicylic acid have been found very useful in the treatment of tuberculosis. In eliminating coliform bacteria from and in reducing the number of Streptococcus fecalis in the feces, mixtures of streptomycin, polymyxin, and bacitracin were found much more effective than polymyxin alone.[44] Such combinations may help solve the problem of bacterial resistance. Care must be exercised, for as Jawetz and his associates[45] point out, definite synergisms and antagonisms develop. For example chloramphenicol, if administered first, has been found to interfere with penicillin activity over a wide range while bacitracin and streptomycin are synergistic with penicillin. It is possible that substances which have been suppressive in tuberculosis—mycomycin, viomycin, and terramycin—may in combination have therapeutic possibilities that alone they do not have. Perhaps neomycin and streptomycin combined may offer more than either alone.

CONCLUSION

The search for new antibiotics goes on constantly, the object being to isolate substances of broad therapeutic spectra which are nontoxic and which do not produce resistant strains in the organisms against which their use is directed. In this paper some of the literature on newer antibiotics, polymyxin or aerosporin, terramycin, neomycin, viomycin, and mycomycin, has been reviewed and attention has been called to the possibilities of combined antibiotic therapy.

1 Hanson Place

REFERENCES

1. Pratt, R., and Dufrenoy, J.: Antibiotics. J. B. Lippincott Co., Philadelphia, 1949.

2. Stansly, P. G., Shepherd, R. G., and White, H. J.: Polymyxin, new chemotherapeutic agent. Bull. Johns Hopkins Hosp. 81:43-54, July 1947.

3. Ainsworth, G. C., Brown, A. M., and Brownlee, G.: "Aerosporin," antibiotic produced by Bacillus aerosporus Greer. Nature, London 160:263, August 23, 1947.

4. Brownlee, G., and Bushby, S. R. M.: Chemotherapy and pharmacology of aerosporin; selective gram-negative antibiotic. Lancet 1:127-132, Jan. 24, 1948.

5. Schoenbach, E. B., *et al.*: Polymyxin; note on experimental and clinical investigations. J. Am. M. A. 136:1096-1098, April 24, 1948.

6. Pulaski, E. J., *et al.*: Symposium on antibiotics; laboratory and clinical studies of polymyxin B and E. J. Clin. Investigation 28:1028-1031 (part 1), Sept. 1949.

7. Kagan, B. M.: Influenzal meningitis; recovery of case of 4 weeks' duration with use of new drug, polymyxin B (aerosporin). Pediatrics 4:319-322, Sept. 1949.

8. Swift, P. N.: Treatment of pertussis with aerosporin. Lancet 1:133-135, Jan. 24, 1948.

9. Kaplan, S. R., Fischer, A. E., and Kohn, J. L.: Treatment of pertussis with polymyxin B (aerosporin). J. Pediat. 35-49-57, July 1949.

10. *Op. cit.*, ref. 5.

11. Finlay, A. C., *et al.*: Terramycin, new antibiotic. Science 111:85, Jan. 27, 1950.

12. Caldwell, E. R., Jr., *et al.*: Treatment of various infections with terramycin. J. Lab. & Clin. Med. 36:747-753, Nov. 1950.

13. Timpanelli, A., Huebner, R. D., and McDermott, W.: Terramycin in the treatment of pneumococcal and mixed bacterial pneumonias. Ann. New York Acad. Sc. 53:440-447, Sept. 15, 1950.

14. Welch, H.: Absorption, excretion, and distribution of terramycin. Ann. New York Acad. Sc. 53:252-265, Sept. 15, 1950.

15. McKenzie, J. A., and Nugent, J. J.: Clinical use of terramycin in infections of the urinary tract. J. Florida M. A. 37:218-223, Oct. 1950.

16. King, E. Q., *et al.*: Clinical observations on the use of terramycin hydrochloride. J. Am. M. A. 143:1-5, May 6, 1950.

17. Douglas, R. G., Ball, T. L., and Davis, I. F.: Terramycin in urinary tract infections. California Med. 73:463-465, Dec. 1950.

18. Di Caprio, J. M., and Rantz, L. M.: Effects of terramycin on bacterial flora of bowel in man. A. M. A. Arch. Int. Med. 86:649-657, Nov. 1950.

19. Dowling, H. F., *et al.*: Terramycin in treatment of pneumococcic and other bacterial infections. Ann. New York Acad. Sc. 53:433-436, Sept. 15, 1950.

20. Current Therapy, 1951, edited by H. F. Conn. W. B. Saunders Co., Philadelphia, 1951, p. 109.

21. Keefer, C. S.: Introduction (Monograph on terramycin). Ann. New York Acad. Sc. 53:223-225, Sept. 15, 1950.

22. *Op. cit.*, ref. 20, p. 49.

23. Most, H., and van Assendelft, F.: Laboratory and clinical observation on the effect of terramycin in treatment of amebiasis. Ann. New York Acad. Sc. 53:427-428, Sept. 15, 1950.

24. Waksman, S. A., and Lechevalier, H. A.: Neomycin, new antibiotic active against streptomycin-resistant bacteria, including tuberculosis organisms. Science 109:305-307, March 25, 1949.

25. Waksman, S. A., Frankel, J., and Graessle, O.: In vivo activity of neomycin. J. Bact. 58:229-237, August 1949.

26. Waisbren, B. A., and Spink, W. W.: Clinical appraisal of neomycin. Ann. Int. Med. 33:1099-1119, Nov. 1950.

27. *Op. cit.*, ref. 20, p. 79.

28. Waksman, S. A.: Streptomycin and neomycin; an antibiotic approach to tuberculosis. Brit. M. J. 2:595-600, Sept. 9, 1950.

29. Carr, D. T., Brown, H. A., and Pfuetze, K. H.: Occurrence of deafness in neomycin therapy. J. Am. M. A. 144:65, Sept. 2, 1950.

30. Duncan, G.: Paper presented at Regional Meeting, American College of Physicians, Philadelphia, Jan. 20, 1950.

31. Lazar, A. M., and Fishman, J.: Neomycin in the treatment of otitis media in infants. Eye, Ear, Nose & Throat Monthly, 29:484-487, Sept. 1950.

32. Hobby, G. L., Lenert, T. F., and Dougherty, N.: Evaluation of neomycin and other antimicrobial agents of bacterial and fungal origin, and substances of higher plants. Ann. New York Acad. Sc. 52:775-781, Dec. 14, 1949.

33. Wooldridge, W. E., and Hoffman, M.: A new antifungal principle produced by Streptomyces fradiae. J. Invest. Dermat. 15:351, Nov. 1950.

34. Meleney, F. S., *et al.*: Efficacy and safety of intramuscular administration of bacitracin in various types of surgical and certain medical infections, with an analysis of 270 cases. Surg., Gynec. & Obst. 89:657-683, Dec. 1949.

35. Teng, P.: Further experiences in treatment of septic meningitis with bacitracin. Arch. Neurol & Psychiat. 64:861-877, Dec. 1950.

36. Meleney, F. S.: Systemic bacitracin in surgical infections. J. Mich. M. Soc. 48:1154-1155, Sept. 1949.

37. *Op. cit.*, ref. 20, p. 3.

38. Council on Pharmacy and Chemistry, American Medical Association: Bacitracin. J. Am. M. A. 145:822-823, March 17, 1951.

39. Jenkins, D. E.: Mycomycin, its present status in tuberculosis. Transactions of the Ninth Streptomycin Conference, St. Louis, April 18-21, 1950.

40. Finlay, A. C., *et al.*: Viomycin: A new antibiotic active against mycobacteria. Am. Rev. Tuberc. 63:1-3, Jan. 1951.

41. Werner, C. A., *et al.*: The toxicity of viomycin in humans. Am. Rev. Tuberc. 63:49-61, Jan. 1951.
42. Hobby, G. L., *et al.*: The activity of viomycin against Mycobacterium tuberculosis and other microorganisms in vitro and in vivo. Am. Rev. Tuberc. 63:17-24, Jan. 1951.
43. Kirby, W. M. M.: Recent trends in antibiotic therapy. J. Am. M. A. 144:233-236, Sept. 16, 1950.
44. Welch, H., Randall, W. A., and Price, C. W.: The effect of streptomycin-bacitracin-polymyxin combination, polymyxin B, and streptomycin with glucuronolactone on the intestinal flora of man. J. Am. Pharm. A. (Scient. Ed.) 39:486-489, Sept. 1950.
45. Jawetz, E., *et al.*: Studies on antibiotic synergism and antagonism; interference of chloramphenicol with action of penicillin. A. M. A. Arch. Int. Med. 87:349-359, March, 1951.

Current Medical Literature

CAT-SCRATCH DISEASE
Nonbacterial Regional Lymphadenitis

A disease entity of unknown origin and associated primarily with cat contact has received widespread attention in the literature during the past 2 years, although it has been recognized since 1932. Debré of Paris published an account of one case of this disease in January, 1950. The designation, "cat-scratch disease," is derived from his article. In the December, 1951, issue of the *A. M. A. Archives of Internal Medicine*, Worth B. Daniels, M.D., and Frank G. MacMurray, M.D., discuss the characteristics of the disease and its apparent similarities to other diseases, many of greater seriousness than cat-scratch disease. They report twelve cases of recent experience with it and the attempts made to develop diagnostic tests for, and to establish the etiology of, the disease.

While inoculation has usually been assumed to take place after association with cats (most often from scratches or bites, but also where no cutaneous lesion has occurred), many other modes of transmission appear to exist, such as injury to the skin by beef bone, various thorns, wood splinters, mosquito bites, and laceration while butchering pork. Cats may only be passive carriers of the disease, possibly obtaining it from some of their natural enemies. Attempts to transmit it to birds or animals, however, have not been successful. In addition, repeated inoculations and scarifications of the skin in experiment volunteers resulted in just one transmission. Very recently Mollaret and his coworkers in Paris have transmitted the disease to three monkeys by using intracutaneously inoculated emulsions prepared from infected human lymph nodes.

Regional adenitis, often with suppuration, is the major characteristic of the disease. Lesions at the site of inoculation frequently develop several days after skin injury, exhibiting an erythematous scab, pustule, or furuncle. Adenopathy can occur between the fourth day and more than a month after inoculation, and it may last from 2 weeks to 3 months. In the limbs it is unilateral, usually involving the epitrochlear and axillary or femoral and inguinal regions. More commonly, the nodes of head and neck are involved, here usually bilaterally. Systemic symptoms, such as chills, headache, and generalized malaise, fever, and rarely, a rash may occur.

Microscopic study of enlarged lymph nodes has shown a characteristic pattern for the disease. The early stage exhibits reticular-cell hyperplasia, and more advanced stages show inflammation, increased vascularization in the periglandular tissues, with beginning necrosis and suppuration. Finally the centers of necrosis coalesce into an eosinophilic mass, with ultimate appearance of fibrosis. No micro-organisms have been demonstrated, despite frequent and diverse methods of staining and culture. Mollaret and his associates, however, have found basophilic "granulocorpuscles" in reticulocytes, plasma cells, and lymphocytes, and they consider them to be a form of the causative virus.

Cat-scratch disease forms may resemble a variety of other diseases, including ulceroglandular tularemia, tuberculous cervical adenitis, infectious mononucleosis, lymphogranuloma venereum, Hodgkin's disease, or other tumor. Specific diagnostic tests are available, fortunately, to distinguish cat-scratch disease from the more serious entities.

A variety of immunological tests for many diseases have produced negative results for this disease, except for sporadically positive complement-fixation reaction with Lygranum, possibly indicating a causative virus related to the lymphogranuloma venereum-psittacosis group. A specific skin test for cat-scratch disease is obtained with an antigen prepared from pus from a diseased lymph gland.

In treating the disease, penicillin, streptomycin, and the sulfonamides have proved valueless. Chloramphenicol appeared to aid one of the authors' patients, and aureomycin and terramycin were reported by other writers to shorten the course of the disease.

SEVERE HEMORRHAGE DUE TO TROMEXAN

Tromexan, a new anticoagulant chemically related to Dicumarol, is credited with a greater margin of safety than is the latter drug, because of more rapid absorption and excretion. In the November 22, 1951, issue of the *New England Journal of Medicine*, Richard P. Gripe, M.D., reports three cases of severe hemorrhage, including one death, subsequent to Tromexan dosage in a series of 125 patients.

The first of the three, an 82-year old woman with generalized arteriosclerosis but no apparent congestive heart failure, was treated with heparin intravenously at 4-hour intervals and Tromexan following a diagnosis of acute anteroseptal myocardial infarction. Prothrombin time initially was 15 seconds, by the one-stage Quick test.

Heparin was discontinued 10 days before any hemorrhaging began. With therapeutic range in prothrombin time considered to be between 30 and 50 seconds, Tromexan dosage was intermittent in accordance with the daily level. On the eleventh day of treatment prothrombin time suddenly increased to 360 seconds, the patient began to void much blood through urine and stool, and blood pressure fell to 86/56.

Transfusion of whole blood was begun immediately with a blood pressure rise to normal limits within 3 hours. Three days after the first hemorrhaging episode, the patient's blood pressure dropped to 60/34 and the bloody stools continued. Hykinone, a synthetic form of vitamin K, Rutin, and vitamin C were used in addition to whole blood. Hemorrhage stopped the following day. Since prothrombin time had dropped 2 days afer Tromexan was discontinued, a severe derangement of the clotting mechanism had clearly developed.

The second patient was a 57-year old man with a diagnosis of cardiac arteriosclerosis and congestive failure, plus probable thrombophlebitis and probable pulmonary infarct. After initial treatment with oxygen, intravenous lanatoside C, mercurial diuretics, morphine, and bed rest, acute thrombophlebitis indicated heparin and Tromexan treatment. Heparin was discontinued the next day, and 40 hours later the appearance of hemorrhage coincided with the sudden rise in prothrombin time to 160 seconds. Whole blood plus Hykinone stopped the hemorrhage within 48 hours.

In the third patient, a 44-year old man suffering from rheumatic heart disease, with mitral stenosis, auricular fibrillation, and multiple emboli, death followed renal and subarachnoid hemorrhage after anticoagulant therapy with heparin and Tromexan. A sudden increase in prothrombin time 5 days after Tromexan was discontinued indicated severe disturbance of the clotting mechanism.

The author suggests that each of the patients was extremely ill so that derangement of the clotting mechanism was easy. Since heparin treatment was stopped at least several days before hemorrhage began, it was assumed not to have participated in the disturbance. Therapeutic dosage of Tromexan could not be exact because of the lag in its effect on prothrombin time; the daily measure of the time, moreover, is not an adequate basis for dosage when the level fluctuates unpredictably. Need for precautions is indicated for the safe use of this drug.

WOOL AS A CAUSE OF ECZEMA IN CHILDREN

According to Lewis Webb Hill, M.D., writing in the September 13, 1951, issue of *The New England Journal of Medicine*, sensitivity to wool is a very probable cause of winter eczema in many children. He bases his conclusions on a study involving 40 children between the ages of 2 and 12 who were severely affected by eczema during the winter months but who became almost symptom free during the summer months.

To determine the degree of sensitivity scratch, patch, and intracutaneous tests with wool were done on all patients. Positive reactions included erythema, fine crusted vesicles, and papules. Apparently there was no relation between positive patch and intracutaneous tests since some patients were positive for one and negative for the other. All scratch tests were negative. Only the positive patch tests (14) were of clinical significance. Obviously wool is not the only cause of winter eczema in children but it is a common cause and one that is easy to trace.

Most of the children in this study who demonstrated wool eczema came from families in which there was a high incidence of allergy. The eczema they demonstrated was of the atopic dermatitis type in which sensitivity to wool developed following prolonged irritation by the substance. In a few instances the sensitivity was of a deeper nature as indicated by a positive reaction to the intracutaneous test which showed that the eczema was clearly due to wool. Three such patients whose conditions were severe enough to be incapacitating were treated by hyposensitizing them to wool. All three responded to treatment. The author does not recommend this type of therapy except in the most severe cases, however. The milder cases were treated by local medication and by keeping all exposed areas away from direct contact with wool. Areas subject to chronic eczema such as in front of elbows, in back of knees, and at the wrists and ankles were covered by cotton cloth and bound with several layers of 2-inch elastic bandage. Other areas of the body were protected by cotton clothing. Synthetic fabrics are recommended in place of wool.

The author comments that although atopic and contact dermatitis are separate clinical entities, many patients exhibit characteristics of both types. Patients presenting atopic dermatitis due to sensitivity to wool as indicated by the patch test are usually classified by the author as having a superficial sensitization. Patients who present in addition to a superficial sensitization a demonstrated allergen reaction are classified as having atopic dermatitis by contact.

THE TREATMENT OF EDEMA OF THE ARM

In the November, 1951, issue of *Surgery, Gynecology and Obstetrics* William T. Foley, M.D., describes a procedure for managing edema of the arm secondary to axillary surgery and axillary venous thrombosis. This method has resulted in continued improvement both physically and cosmetically in a small group of patients so treated.

Make Hotel Reservations Now!

Fifty-Sixth Annual Convention — American Osteopathic Association
Atlantic City, New Jersey — July 14 to 18, 1952

Hotel Rates*

See hotel reservation blank on next page

NAME OF HOTEL	ROOMS WITH BATH		TWO ROOMS—ONE BATH			ROOM AND PARLOR
	Single	Double	2 Persons	3 Persons	4 Persons	Double
AMBASSADOR	$6 to $14	$8 to $18	$12	$16 to $25	$16 to $25	$20 to $36
RITZ-CARLTON	6 to 12	8 to 14			20	30
CHELSEA	5 to 11	7 to 15		12	15	
CLARIDGE		14 to 20				
MADISON	6	7 to 10			14 to 18	
MARLBOROUGH-BLENHEIM	6 to 9	9 to 18	15 to 17	15 to 19	17 to 22	27 to 36
SHELBURNE	6 to 16	9 to 18				
TRAYMORE	6 to 14	8 to 18				18 to 45

Note: Single rooms are extremely limited in number. You will stand a much better chance of securing accommodations if your request calls for rooms to be occupied by two or more persons.

*The above rates are subject to 3 per cent Municipal Tax. Rates listed are subject to change.

Important!

Please read these instructions before filling out application on next page

1. All reservations must be made directly through the A.O.A. Housing Bureau, 16 Central Pier, Atlantic City, N. J. Do not send reservations to the Local Convention Arrangements Committee or to the American Osteopathic Association Central Office.

2. If you expect to attend any meetings scheduled prior to or after the National Convention itself, these meetings must be listed by name of group and the dates must be given.

Classifications of Eligible Applicants for Hotel Accommodations

Member, Officer, Trustee, Delegate, Alternate, Scientific or Technical Exhibitor

Arm edema of this type is characterized by progression, disability, and pain. Sometimes the swelling develops as early as 6 weeks postoperatively. In other instances it may develop gradually over a period of many years and be associated with progressive enlargement of the arm leading ultimately to massive elephantiasis in many patients. The edema may occur first in the hand followed by gradual enlargement of the arm or it may appear first in the forearm and later extend to the wrist and hand. Persistent and disabling neuralgia is often a major complication. The cosmetic appearance of the enlarged arm frequently has an adverse psychological effect.

Apparently the exact etiology of edema of the arm is unknown. Several theories have been suggested including postoperative infection, axillary vein thrombosis following postmastectomy, removal of lymph channels and nodes incident to radical mastectomy, and development of scar tissue with resultant contraction. The blockage of lymph channels and nodes by recurrent malignant disease must always be considered in cases of edema of the arm. Such cases do not respond to medical management and have not been included in this study.

The method of treatment devised by the author for treating edema of the arm is based upon sound physiological principles. The suggested treatment includes the use of gravity, compression, and massage. In some instances dehydration has also been tried.

Prolonged elevation almost always results in reduction of the swelling. In order to maintain elevation without undue discomfort to the patient the author suggests employing a frame—such as an ordinary fracture frame—using counterweights. A close-fitting glove, the middle finger of which has been sewed to the rope, is suggested as a satisfactory way of attaching the patient's hand to the frame. The glove technic distributes the tension throughout the hand without causing constriction. The usual procedure is for the patient to maintain the arm in suspension during the night. Upon arising, the patient puts on an elastic sleeve to prevent the fluid which has drained out during the night from reaccumulating. The sleeve, which extends from the distal portion of the palm to the midbrachium, should be constructed of heavy elastic material similar to that used in elastic stockings. The sleeve is worn throughout the day. Some patients have been able to abandon the sleeve after 6 months without return of the swelling.

Two daily 10-minute sessions of massage are recommended. Patients are instructed to stroke their arms in the direction of the lymph flow, beginning with short strokes at the shoulders and gradually increasing the length of the strokes to include the entire hand and arm. Whirlpool baths may also prove helpful. Where deemed necessary, dehydration has been employed during the first week of treatment to hasten the reduction of swelling. The regime includes a 2 gram salt diet and the administration of mercurial diuretics either daily or every other day.

Eight specific cases treated successfully by these technics are reported by the author.

Application for Hotel Accommodations for

AMERICAN OSTEOPATHIC ASSOCIATION CONVENTION

Atlantic City, New Jersey—July 14 to 18, 1952

See reverse side for instructions and hotel prices

A. O. A. Housing Bureau
16 Central Pier
Atlantic City, N. J.

Date of Application.....

Meetings to Be Attended—Be Sure to Check!

Do you plan to attend a meeting to be held prior to National Convention?.....

Do you plan to attend a meeting to be held after National Convention?.....

Accommodations Desired

Choice of Hotels

First Choice.....Second Choice.....Third Choice.....

If the hotels of your choice are unable to accept your reservation, the A. O. A. Housing Bureau will make as good a reservation as possible elsewhere, providing all hotel rooms have not already been taken.

One Room.....Two Rooms, Bath.....Room and Parlor.....

Date and Hour of Arrival.....Date and Hour of Departure.....

Guests' Names

THE NAME OF EACH HOTEL GUEST MUST BE LISTED. Therefore, please include the names of both persons for each double room requested. Names and addresses of all persons for whom you are requesting reservations and who will occupy the rooms are as follows:

.....

.....

.....

Individual Requesting Reservations

Name.....

Address.....

City.....Zone.....State.....

Name of Firm if Technical Exhibitor.....

ALL RESERVATIONS MUST BE RECEIVED PRIOR TO JUNE 10, 1952

Conventions and Meetings

Announcements

American Osteopathic Association, Fifty-Sixth Annual Convention, Atlantic City, N. J., July 14-18, inclusive. Program Chairman, William B. Strong, Brooklyn.

American College of Osteopathic Obstetricians and Gynecologists, annual meeting, Hotel Statler, Detroit, February 8-15. Program Chairman, Lester Eisenberg, Upper Darby, Pa.

American College of Osteopathic Surgeons, annual meeting, Neil House, Columbus, Ohio, October 26-30.

American Osteopathic Academy of Orthopedics, annual meeting, Neil House, Columbus, Ohio, October 26-30. Program Chairman, Warren G. Bradford, Dayton, Ohio.

American Osteopathic College of Proctology: See American Osteopathic Society of Proctology.

American Osteopathic College of Radiology, annual meeting, Neil House, Columbus, Ohio, October 26-30. Program Chairman, J. Armande Porias, Newark, N. J.

American Osteopathic Society of Proctology, with American Osteopathic College of Proctology, Atlanta Biltmore Hotel, Atlanta, April 1-3. Program Chairman, George R. Norton, Fort Lauderdale, Fla.

American Osteopathic Hospital Association, annual meeting, Neil House, Columbus, Ohio, October 26-30.

American Society of Osteopathic Anesthesiologists, annual meeting, Neil House, Columbus, Ohio, October 26-30.

Arizona, annual meeting, Hotel Westward Ho, Phoenix, May 16-18. Program Chairman, Dwight A. Stiles, Phoenix.

California, annual meeting, Hotel Del Coronado, Coronado Beach, May 5-9. Program Chairman, Edward Randel, Los Angeles.

Florida, annual meeting, Hotel Dixie Sherman, Panama City, May 15-17. Program Chairman, William E. White, Bradenton.

Georgia, annual meeting, May 2, 3.

Illinois, annual meeting, Chicago, April 25-27. Program Chairman, Ransom L. Dinges, Orangeville.

Indiana, annual meeting, Honeywell Memorial Center, Wabash, May 4-6. Program Chairman, Fred L. Swope, Richmond.

Iowa, annual meeting, Hotel Savery, Des Moines, May 19, 20. Program Chairman, Donald C. Giehm, Sioux City.

Kansas, annual meeting, Jayhawk Hotel, Topeka, April 26-30. Program Chairman, E. A. Rindt, Fredonia.

Maine, annual meeting, Hotel Samoset, Rockland, June 19-21.

Michigan, annual meeting, September 29 through October 2, Grand Rapids.

New York, annual meeting, Hotel Powers, Rochester, October 10, 11. Program Chairman, Merritt C. Vaughan, Rochester.

North Carolina, annual meeting, Battery Park Hotel, Asheville, October 24, 25. Program Chairman, Elizabeth E. Smith, Asheville.

North Dakota, annual meeting, Hotel Wahpeton, Wahpeton, May. Program Chairman, Erwin O. Smith, Wahpeton.

Northwest Osteopathic Convention, annual meeting, Chinook Hotel, Yakima, Washington, June 23-25. Program Chairman, Wilbert B. Saunders, Seattle.

Oregon: See Northwest Osteopathic Convention.

Pennsylvania, refresher course, Brunswick Hotel, Lancaster, February 29 to March 1. Program Chairman, K. T. Steigelman, York.

Rhode Island, annual meeting, March 5, 6. Program Chairman, Frederick S. Lenz, Cranston.

South Dakota, annual meeting, Marvin Hughitt Hotel, Huron, June 1-3. Program Chairman, C. Steele Betts, Huron.

in TRICHOMONIASIS

ARGYPULVIS provides

AN UNBROKEN CHAIN OF CONTROL

98% effective . . . as reported by Reich, Button and Nechtow*

This modern and timely adaptation of the multiple actions of ARGYROL provides the same powder form (encapsulated) for supplemental home treatments that you use for office insufflation. It is the unbroken chain of effectiveness which makes for better control.

Why not send for professional samples and demonstrate all this for yourself. Just fill in and mail the coupon.

ARGYPULVIS

ARGYROL and ARGYPULVIS are registered trademarks, the property of

A. C. BARNES COMPANY
NEW BRUNSWICK, N. J.

INTRODUCTORY OFFER TO PHYSICIANS:
*On request we will send professional samples of ARGYPULVIS (both forms), together with a reprint of the Reich, Button and Nechtow report. (Use coupon.)

A. C. Barnes Company
Dept. AO-22, New Brunswick, N. J.

Name _____
Address _____
City _____ State _____

"magic"
in
a
syringe

vi-syneral injectable

the first aqueous multivitamin parenteral solution

The old saying "oil and water can't mix" is no longer true. In Vi-Syneral Injectable—through the "magic" of a process* developed by U. S. Vitamin Corporation—the oil-soluble vitamins (A, D and E) are in aqueous solution, plus vitamin C and B complex factors.

Particularly valuable in severe deficiencies and where gastrointestinal absorption is impaired.

- for more rapid, complete and certain absorption
- speedier tissue replenishment
- ready for intramuscular injection
- negligible local reactions

Each 2 cc. dose provides in aqueous solution:

Vitamin A (natural)	10,000 Units
Vitamin D (calciferol)	1,000 Units
dl, Alpha-Tocopherol (E)	2 mg.
Ascorbic Acid (C)	50 mg.
Thiamine HCl (B_1)	10 mg.
Riboflavin (B_2)	1 mg.
Niacinamide	20 mg.
Pyridoxine HCl (B_6)	3 mg.

Boxes of 1, 6, 25 and 100—10 cc. vials.
Also, 2 cc. ampuls, boxes of 6, 25, 100 and 500.

new ▶ 10 cc. multiple dose vials • saves as much as 45%

Samples and literature upon request.

u. s. vitamin corporation
Casimir Funk Laboratories, Inc. (affiliate)
250 East 43rd Street • New York 17, N. Y.

*same exclusive process (U. S. Pat. No. 2,417,299) as used in making AQUASOL A Capsules, VI-AQUA and VI-SYNERAL VITAMIN DROPS and other "oil-in-water" preparations.

Texas, annual meeting, Adolphus Hotel, Dallas, May 1-3. Program Chairman, A. L. Garrison, Port Arthur.

Vermont, annual meeting, October 1, 2. Program Chairman, Roy M. Sherburne, St. Johnsbury.

Virginia, annual meeting The Lodge, Williamsburg, May 23, 24.

Washington: See Northwest Osteopathic Convention.

West Virginia, annual meeting, Daniel Boone Hotel, Charleston, June 8-10. Program Chairman, Roland P. Sharp, Mullens.

Wisconsin, annual meeting, Hotel Schroeder, Milwaukee, May 6-8. Program Chairman, Ray J. Dennis, Milwaukee.

OFFICIAL AND AFFILIATED ORGANIZATIONS

ARIZONA

State Society

The program presented at the meeting on November 11 in Tucson was as follows: "The Development of Anorectal Pathology" and "Reflex Symptomatology of Orificial Lesions," Lester J. Vick, Amarillo, Tex.; and talks entitled "Protein Metabolism and Utilization" and "Nutrition and Resistance to Stress."

Tucson

The officers and trustee are: President, Thomas J. Odom; vice president, Vernon W. Pierce; secretary-treasurer, Leona W. Benton; and trustee, Earl I. Agnew, all of Tucson.

CALIFORNIA

Citrus Belt

W. Donald Baker, Los Angeles, spoke on "Diagnosis and Treatment of Common Venous Problems" at the November 8 meeting in Riverside.

Pomona Valley

The officers are: President, Norman J. Larus, Azusa; president-elect, Richard E. Eby, Pomona; and secretary, Elsie M. Havemann, Monrovia.

Redwood Empire

A meeting was held in Santa Rosa on October 16.

San Jose

Speakers at the meeting on November 3 in San Jose were Pearl Oliphant, Santa Cruz, and Parnell F. J. Buscher, San Francisco.

West Los Angeles

Speaker at the meeting on November 13 was Robert V. Walden. His topic was "Neurological Problems in General Practice."

ILLINOIS

State Society

Mr. Douglas O. Durkin, Chicago, will serve as executive secretary in place of Mr. Albert S. Gardner, also of Chicago.

INDIANA

District Three

A meeting was held in Wabash on November 14.

District Five

Norman Earl Denny, Vincennes, presented a program on the early diagnosis and treatment of neoplasms at the December 2 meeting in Spencer.

IOWA

Third District

The officers are: President, Maurice G. Tincher, Fort Madison; vice president, Idris S. Lodwick, Ottumwa; and secretary-treasurer, Georgia I. Chalfont, Oskaloosa. All of the officers were re-elected.

Fifth District

The officers are: President, Roger B. Anderson, Manning; vice president, Raymond J. Zimmerman, Sioux City; and secretary-treasurer, Charles E. Starr, Ireton.

Sixth District

The officers are: President, Rachel Hodges Woods (re-elected), Des Moines; vice president, B. A. Storey (re-elected), Nevada; and secretary-treasurer, George C. Keays, Ankeny.

The trustees are: Bert Adams, Ames, and Carl Waterbury, Des Moines.

KANSAS

Arkansas Valley

A meeting was held in Larned on November 29. Donald C. Ford, Lucas, spoke on the subject "Hints on Therapy for the General Practitioner."

Mid-Kansas

A lecture and demonstration of upper dorsal and cervical technic was given

at the November 14 meeting in Moundridge by R. W. Burditt of that city.

The December 12 meeting was held in Burns. Robert L. Wright and D. W. Hendrickson, both of Wichita, presented case histories and x-rays of several types of malignancies and also discussed the details of diagnosis and treatment.

KENTUCKY

State Society

The officers are: President, W. G. Hudson, Florence; vice president, W. Orville Mayfield, Sacramento; secretary, Harold D. Benteen (re-elected), Ashland; and treasurer, Nora Prather (re-elected), Louisville.

The trustees are: Edmund H. Bouton, Frankfort, Ellis M. Day, Whitesville, Carl J. Johnson, Louisville, Henry P. Lawrence, Hawesville, and Ralph S. Brown, Warsaw.

Committee chairmen are: Membership, Dr. Prather; public education on health and ethics, Dr. Johnson; vocational guidance, Dr. Mayfield; publicity and program, Martha Garnett; public and professional welfare, William B. Faxon, both of Louisville; and insurance, George E. Heibel, Lexington, Dr. Johnson, and Dr. Mayfield.

MAINE

State Society Auxiliary

The officers are: President, Mrs. Earl H. Gedney, Bangor; president-elect, Mrs. J. Marshall Gerrie, Pittsfield; vice president, Mrs. Edward Ropulewis, Old Town; secretary, Mrs. Wilfred Rambo, Bangor; corresponding secretary, Mrs. Howard J. LeBarge, Dexter; and treasurer, Mrs. John O. Willey, Houlton.

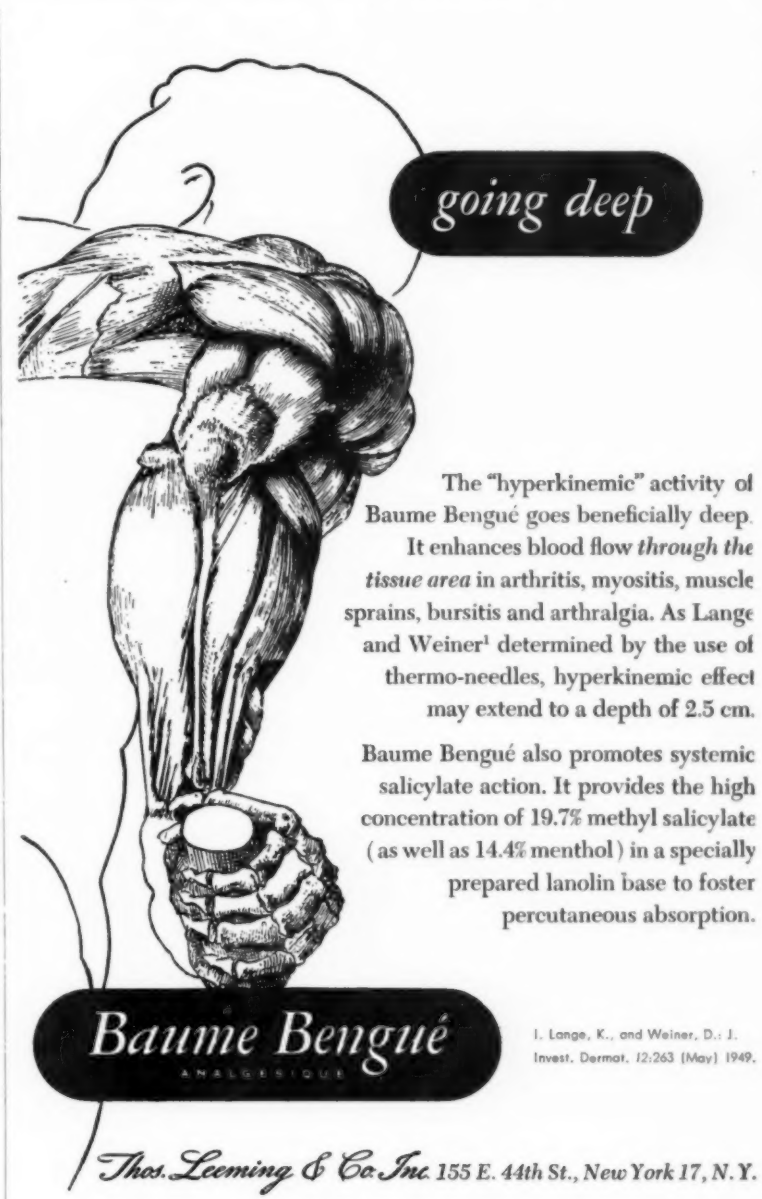
MASSACHUSETTS

Connecticut Valley

"Spinal Mechanics and Diagnosis" was the subject to be discussed at the December 11 meeting in Northampton.

Essex County

Samuel B. Jones, Worcester, John A. Robertson, Arlington, and Robert R. Brown, Belmont, were to present a panel discussion entitled "State Organization, Its Past Accomplishments, Present Problems, and Future Aims" at the meeting in East Lynn on December 11.


going deep
The "hyperkinemic" activity of Baume Bengué goes beneficially deep. It enhances blood flow *through the tissue area* in arthritis, myositis, muscle sprains, bursitis and arthralgia. As Lange and Weiner[1] determined by the use of thermo-needles, hyperkinemic effect may extend to a depth of 2.5 cm.
Baume Bengué also promotes systemic salicylate action. It provides the high concentration of 19.7% methyl salicylate (as well as 14.4% menthol) in a specially prepared lanolin base to foster percutaneous absorption.
Baume Bengué
ANALGESIQUE
1. Lange, K., and Weiner, D.: J. Invest. Dermat. 12:263 (May) 1949.
Thos. Leeming & Co. Inc. 155 E. 44th St., New York 17, N.Y.

MICHIGAN

State Society

The officers, trustees, and some bureau chairmen were listed in the January JOURNAL.

Committee chairmen are: Athletics and athletic insurance, J. Vincent Murphy, Grand Blanc; life, health, and accident insurance, Robert E. Benson, St. Johns; continuing education, Alan R. Becker, Jackson; audiovisual education, Hal K. Carter; vocational guidance and tuberculosis control, Donald J. Evans; venereal disease control, James D. Stover; undulant fever control, J. L. McDougal; cardiology, Sydney F. Ellias; photographic editor, Mr. Joe Clark, all of Detroit; advertising editor, Miss Beth Garrett Smith; publication editor, Mr. Harve Lamont Smith; maternal and child health, James G. Matthews, Jr.; cancer control, A. P. Ulbrich; disease control, Neil R. Kitchen, all of Highland Park; standardization and certification of specialists, William F. Scully, Marine City; public health, Daniel W. McKinley, East Detroit; insurance advisor and publications editor-in-chief, William C. Brenholtz, Flint; crippled children, Emmett Binkert, Carson City; social welfare, H. William Guinand, Evert, and E. H. McKenna, Muskegon Heights; editorial board, Campbell A. Ward, Mt. Clemens; and technical editor, P. Ralph Morehouse, Albion.

Additional bureau chairmen are: Legal status, Dr. Guinand; ethics, Dr. McKenna; insurance, Dr. Murphy; professional liability insurance, Lawrence M. Jarrett, Lansing; hospitals and clinics, Bertram E. Crase, Battle Creek; and veterans affairs, H. S. Sinclair, Grosse Pointe Park.

Members of the committee on honorary memberships and distinguished service certificates are: Hobert C. Moore, Bay City, Edward A. Ward, Saginaw,

Rapid Relief

FOR MUSCULO-SKELETAL ACHES AND PAINS

RUB A-535

ARTHRITIS •
RHEUMATISM •
BURSITIS •
MYOSITIS •
NEURITIS •
SCIATICA •
LUMBAGO •

Rub A-535's combination of time-proven ingredients, in a modern non-greasy, stainless, vanishing base, facilitates rapid analgesic and counter-irritant action in the symptomatic treatment of a wide range of musculo-skeletal conditions.

Rub A-535 contains four active ingredients: Camphor 1%, Menthol 1%, Oil Eucalyptus ½%, Methyl Salicylate 12%.

Rub A-535 may be used following diathermy, infra-red lamps, baking and other forms of physio-therapy.

THE DENVER CHEMICAL MFG. CO., Inc.
163 Varick Street, New York 13, N.Y.
For a professional sample of Rub A-535 Write Dept. C-21

Earl E. Congdon, Flint, John P. Wood, Birmingham, and Ralph F. Lindberg and Otterbein Dressler, both of Detroit.

The 1952 convention committee chairmen are: General chairman, J. Calvin Geddes; public relations and entertainment, Willis H. Yeamans; nurses and receptionists' session, G. E. Folkman, all of Mt. Clemens; honorary general, Russell M. Wright; public relations, Harry P. Stimson; counsellor, Mr. Smith, all of Highland Park; civil defense, Dr. Brenholtz, Flint; program, William R. Kerr, Romeo; exhibit and facilities, Stanley S. Conrad, Roseville; athletic banquet, Dr. McKinley; service clubs, Dr. Ward; vocational guidance luncheon, Dr. Becker; hospital luncheon, Dr. Crase; alumni luncheons, John F. Paul, New Baltimore; past presidents' dinner, Claude B. Root, Greenville; veterans' luncheon, Alfred H. Crighton, Warren; annual banquet and ball, Dr. Geddes; and speakers, Dr. Turner and Robert T. Lustig, Grand Rapids.

Hospital Association

The officers are: President, Mr. H. C. Parsons, Muskegon; vice president, Mr. Donald McKenna, Carson City; president-elect, Mr. William R. Butt, Saginaw; and secretary-treasurer, Mr. John Zemke, Mt. Clemens.

The directors are: Mr. Earl J. Lewis, Detroit, Mr. Keith Bowker, Flint, and Bertram E. Crase, Battle Creek.

State Society Auxiliary

The officers are: President, Mrs. R. P. Perdue, Flint; president-elect, Mrs. Hobert C. Moore, Bay City; vice president, Mrs. L. M. Jarrett, Lansing; secretary, Mrs. S. S. Conrad, Roseville; and treasurer, Mrs. E. J. Wegner, Detroit.

Kent County

The officers are: President, Roy G. Bubeck, Jr. (re-elected); vice president, Donald L. Cummings; secretary, Henry F. Olen (re-elected); and treasurer, Keith R. Sisson, all of Grand Rapids.

The trustees are: Arthur T. Taylor, Arthur Witthohn, and William A. Ellis, all of Grand Rapids.

Western

The officers are: President, Duncan Oliphant, Muskegon; vice president, Frank E. Durnell, Muskegon Heights; and secretary-treasurer, Hilden T. Blohm (re-elected), Muskegon.

The department chairmen are: Surgery, Dr. Durnell; internal medicine, William S. King, Muskegon Heights; obstetrics, Roy G. Bubeck, Jr., Grand Rapids; proctology, Russell J. Riley; x-ray, D. M. Davidson; and anesthesiology, Augustine R. Novak, all of Muskegon.

The committee chairmen are: Filter, Herbert A. Walters; public health and public relations, Hiram R. Nutt; ethics, Sidney L. Michelman; statistics, Dr. Blohm, all of Muskegon; legal and legislative and vocational guidance, E. H. McKenna; and hospital and intern, Dr. Durnell, both of Muskegon Heights.

MISSOURI

State Society Auxiliary

The officers are: President, Mrs. L. R. Morgan, Joplin; president-elect, Mrs. Russell Glaser, St. Louis; vice president, Mrs. John Hartsock, St. Joseph; secretary, Mrs. Howard Gross, Kirksville; and treasurer, Mrs. M. H. Kneeland, Liberal.

Central

A meeting was held on December 13 in Vandalia. Speakers were James R. Dougherty, Vandalia, and Mr. H. Gray Harris, State Division of Health.

Central Ozark

A meeting was held in Rolla on December 13.

NEW JERSEY

Bergen-Passaic County

Ruth V. Waddel, Oradell, conducted a clinicopathologic conference illustrated by slides and specimens at the December meeting.

Essex County

The officers were reported in the August JOURNAL.

The committee chairmen are: Membership, Donald K. Christian, Orange; ethics, James C. Christian, East Orange; convention program and convention arrangements, Norman K. Sewall, Bloomfield; hospital, clinics and statistics,

Edward H. Johnson, Montclair; legislation, Henry Palmaffy; public health, Henry J. Hoyer, both of South Orange; industrial and institutional service, John D. Dennis, Jr., East Orange; public relations, Robert Saber, Maplewood; and graduate study, George W. Northup, Livingston, and James C. Christian.

NEW YORK

State Society

The officers and directors were reported in the December JOURNAL.

The department chairmen are: Professional affairs, John R. Pike, Albany; public affairs, William B. Strong, Brooklyn; and state affairs, C. Edwin Long, Jr., Buffalo.

The committee chairmen are: Emergency medical service, W. Kenneth Riland, New York; and public health, Francis J. Beall, Jr., Syracuse. Members of the postgraduate qualifying board are William O. Kingsbury, New York, Dr. Strong, and Dr. Pike.

OHIO

Ninth District (Warren)

A meeting was held in conjunction with the Fourth District (Ashtabula) in Warren on December 6. Domenic J. Aveni, Cleveland, spoke on "Industrial Medicine in Relation to Public Welfare." Mr. William S. Konold, Columbus, spoke on "Local Academy Responsibilities to Public Welfare."

Fifteenth District (Cincinnati)

Tom V. Canfield, Cincinnati, was scheduled to present a talk entitled "Our Part in the Local Civil Defense Set-up" at the meeting on January 10.

OKLAHOMA

State Society

The officers are: President, C. G. Ewing, Yale; president-elect, Percy R. Riemer, Pawnee; vice president, Wayne H. Roberts, Edmund; secretary-treasurer, G. R. Thomas; and executive secretary, Mr. Walter L. Gray, both of Oklahoma City.

The trustees are: H. W. Kenaga, Hugo, Eugene F. Ross, Lindsay, Herbert R. Stuart, Tulsa, Robert G. Gillson, Poteau, Ivan E. Penquite, Sapulpa, E. Frank Nelms, Wagoner, Dr. Ewing, Dr. Riemer, Dr. Roberts, and LeRoy F. Gau, Enid.

PENNSYLVANIA

District Three

Guest speaker at the November meeting was Galen S. Young, Philadelphia. His topic was "The Upper Abdomen and the General Practitioner."

The program for the December meeting was to include a talk by Philip M. Lessig, Philadelphia, entitled "Parasitology and the General Practitioner."

TENNESSEE

State Society Auxiliary

The officers are: President, Mrs. L. J. Phillips, Friendsville; president-elect, Mrs. Marion E. Coy, Jackson; vice president, Mrs. R. D. Shepherd, Dunlap; and secretary-treasurer, Mrs. J. A. Moore, Dyersburg.

GOOD NIGHT

Restful sleep within 15 to 30 minutes . . . *induced* by TWIN-BARB's shell of pentobarbital sodium (1½ gr.), *sustained* by a delayed release of enteric-coated phenobarbital (½ gr.)

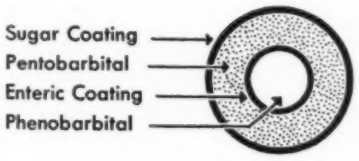
GOOD MORNING

Little, if any, likelihood of "hangover" symptoms —thanks to TWIN-BARB's unique tandem action and carefully adjusted barbiturate balance

TWIN-BARB

TRADEMARK

PENTOBARBITAL + PHENOBARBITAL



a new TWIN-ACTION sedative of unique construction

SUPPLIED: Bottles of 100 and 1000 round, blue tablets.

B. F. ASCHER & COMPANY, INC.
Ethical Medicinals KANSAS CITY, MISSOURI

WASHINGTON

King County

The officers are: President, Francis D. Goddard; vice president, Herbert G. Bauer; secretary, Mary Eleanor Gillies (re-elected); and treasurer, Arthur B. Cunningham (re-elected).

The trustees are: Eugene E. LaCroix, Dr. Gillies, and Perry C. Wilde. All of the officers and trustees are from Seattle with the exception of Dr. LaCroix who is from Seahurst.

WEST VIRGINIA

Ohio Valley

A meeting was held on October 25 in Steubenville. Joseph Noe, M.D., East Liverpool, spoke on the subject "Industrial Medicine."

A. B. Graham, Wheeling, spoke at the November 29 meeting in Steubenville. His topic was "Industrial Low-back Injuries."

WISCONSIN

Fox River Valley

The speaker at the meeting in Appleton on December 13 was C. Henry Barr, Hustisford. Dr. Barr presented a paper entitled "X-ray Interpretation in Relation to Office Roentgenology."

Milwaukee

A meeting was held on December 6. Burton Waisbren, M.D., of the Research Department, County Health Department, spoke on antibiotics.

Northwest

The officers are: President, John W. Newton, Hammond; and secretary-treasurer, Donald R. Bartingale, Eau Claire.

Now.. GREATER CONVENIENCE in the ADMINISTRATION of A LOCAL ANESTHETIC

1. The Anestube (metal-capped cartridge container) is inserted directly into the tray of the lightweight metal-framed syringe and pushed forward until the proximal end of the cartridge needle penetrates the thin metal cap of the Anestube.

2. The Anestube is locked into the tray by turning the knurled knob. (This system permits aspiration). Now you are ready to inject the precisely-compounded, safe, profound anesthetic solution into the tissues.

3. Contents are injected into the tissues! This simple, convenient method takes only a few seconds.

MONOCAINE in METAL CAP ANESTUBES

NOVOCOL CHEMICAL MFG. CO., INC.

Detailed information on this convenient method of administering a local anesthetic and other pharmaceuticals available on request.

ENGLAND

British Osteopathic Association

The officers are: President, Murray R. Laing; first vice president, Sidney S. Ball, both of London; second vice president, Delbert Mead Burnett, Liverpool; honorary secretary, Dr. Ball (re-elected); and honorary treasurer, R. G. Puttick (re-elected), London.

Council members are: Harry F. Cooper, Bournemouth, Russell G. Alexander, Manchester, Dr. Burnett, William M. McClung, Jean W. Johnston, J. R. Bond, Thurston True, all of London, Philip A. Jackson, Oxford, Don O. Johnson, Liverpool, and D. Sutcliffe Lean, Southport.

SPECIAL AND SPECIALTY GROUPS

ACADEMY OF APPLIED OSTEOPATHY

Puget Sound

The program planned for the January 19 meeting in Seattle was: "Ventral Technic—The Radix Mesenterium," by H. V. Hoover; "Fifty Years of Osteopathic Research," by Mary Alice Hoover, both of Tacoma; "Stress in the Etiology of Disease," by Milton P. Thorpe, Vancouver, B. C., Canada; and "Fifty Years of Osteopathy," by Martin D. Young, Seattle.

ILLINOIS OSTEOPATHIC SOCIETY OF RADIOLOGY

The program to be presented at the meeting in Chicago on December 2 included: "Diseases of the Pulmonary Tract," a lecture by Ray E. Bishop, Chicago, and a group discussion period conducted by L. A. Rausch, South Bend, Ind.

TEXAS OSTEOPATHIC RADIOLOGICAL SOCIETY

The officers are: President, Harry M. Grice, Houston; vice president, Alan J. Poage, El Campo; and secretary-treasurer, Ester M. Roehr, Houston.

Charles D. Ogilvie, Tyler, will serve as program chairman.

State and National Boards

ALBERTA

Examinations in April. Address G. B. Taylor, Acting Registrar, Office of the Registrar, University of Alberta, Edmonton, Alberta.

ARIZONA

Basic science examinations March 18 at the University of Arizona, Tucson. Applications must be completed by March 4. Address Herbert D. Rhodes, Ph.D., secretary-treasurer, Basic Science Board, Science Hall, University of Arizona, Tucson.

COLORADO

Basic science examinations March 5, 6, Lecture Room, second floor, Y.M.C.A. Building, 16th and Lincoln Sts., Denver. Applications must be filed by February 20. Address Esther B. Starks, D.O., secretary, Basic Science Board, 1459 Ogden St., Denver 3.

CONNECTICUT

Examinations March 4. Address H. Wesley Gorham, D.O., secretary, Osteopathic Examining Board, 520 West Ave., Norwalk.

DISTRICT OF COLUMBIA

Professional examinations May 12, 13, at George Washington University Medical School. Basic science examinations April 21, 22. Applications for each must be completed by April 1. Address Daniel L. Seckinger, M.D., secretary, Health Department, Commission on Licensure, East Municipal Building, Washington, D. C.

HAWAII

Examinations in April. Address Mabel A. Runyan, D.O., secretary, Board of Osteopathic Examiners, 2333 C. Kalakaua Avenue, Honolulu 30.

ILLINOIS

Examinations April 1-3. Applications must be filed 10 days in advance. Address Mr. Charles F. Kervin, Superintendent of Registration, Illinois Department of Registration and Education, Medical Division, State House, Springfield.

IOWA

Basic science examinations April 8 in Des Moines. Address Ben H. Peterson, Ph.D., secretary, Board of Basic Science Examiners, Coe College, Cedar Rapids.

MASSACHUSETTS

Examinations March 11. Address George L. Schadt, M.D., secretary, Board of Registration in Medicine, State House, Boston 33.

MICHIGAN

Basic science examinations in May. Applications must be filed in advance. Address Miss Eloise LeBeau, secretary-treasurer, State Board of Examiners in the Basic Sciences, 101 North Walnut Street, Lansing.

MINNESOTA

Professional examinations March 11. Address George F. Miller, D.O., secretary, State Board of Osteopathic Examiners, 601 Dayton Ave., St. Paul 2.

Basic science examinations April 1, 2 at Millard Hall, University of Minnesota, Minneapolis. Applications must be filed by March 10. Address Raymond N. Bieter, M.D., secretary, Board of Examiners in the Basic Sciences, 105 Millard Hall, University of Minnesota, Minneapolis 14.

MONTANA

Examinations March 4. Applications must be filed in advance. Address Asa Willard, D.O., secretary, Board of Osteopathic Examiners, Wilma Bldg., Missoula.

NEBRASKA

Basic science examinations in May. Applications must be filed in advance. Address Mr. Husted K. Watson, director, Bureau of Examining Boards, Room 1009, State Capitol Building, Lincoln 9.

NEW HAMPSHIRE

Examinations March 13, 14 in Concord. Address John S. Wheeler, M.D., secretary, Board of Registration in Medicine, State House, Concord.

NEW MEXICO

Basic science examinations March 16 at the State Capitol Bldg., Santa Fe. Applications must be filed in advance. Address Mrs. Marguerite Cantrell, secretary, Board of Examiners in the Basic Sciences, P. O. Box 1522, Santa Fe.

OREGON

Basic science examinations March 1, Room 306, Lincoln High School, 1620 S.W. Park Street, Portland, at 9:00 a.m. Applications must be filed by February 13. Address Charles D. Byrne, Ph.D., secretary, State Board of Higher Education, Eugene.

TENNESSEE

Examinations are held on the second Wednesday in February and the last Wednesday in July at Nashville. Address M. E. Coy, D.O., secretary, Board of Examination and Registration for Osteopathic Physicians, 1226 Highland Ave., Jackson.

WISCONSIN

Basic science examinations April 5 at the Assembly Chamber, State Capitol, Madison. Applications must be completed by March 29. Address Professor William H. Barber, secretary, Board of Examiners in the Basic Sciences, Watson and Scott Streets, Ripon.

WYOMING

Examinations February 4, 5 in Cheyenne. Address Franklin D. Yoder, M.D., secretary, State Board of Medical Examiners, State Capitol, Cheyenne.

REREGISTRATION OF OSTEOPATHIC LICENSES

Before March 1—Colorado, $2.00 if legal resident of Colorado; $10.00 if not legal resident. Address Miss Beulah H. Hudgens, executive secretary, Board of Medical Examiners, 831 Republic Bldg., Denver 2.

March 31—Georgia, no registration fee, professional fee, $15.00. Address Robert K. Glass, D.O., secretary, Board of Osteopathic Examiners, 834-5 Forsyth Bldg., Atlanta.

April 1—Wyoming, $2.50. Address Franklin D. Yoder, M.D., secretary, Board of Medical Examiners, State Capitol, Cheyenne.

April 15—Montana, $2.00 if legal resident of Montana; $1.00 if not a legal resident. Address Asa Willard, D.O., secretary, Board of Osteopathic Examiners, Wilma Building, Missoula.

May 1—Iowa, $1.00. Address Mr. Dwight S. James, assistant secretary, Board of Osteopathic Examiners, 200 Walnut Bldg., Des Moines.

May 1—Washington, $2.00. Address Mr. Robert L. Smith, director, State Department of Licenses, Olympia.

FOR GENERAL OR SPECIAL PRACTICE

SHAMPAINE

MARTIN

ALL-PURPOSE CHAIR TABLE

GIVES YOU THE *EXACT* POSITION YOU WANT—WHEN YOU WANT IT!

Fulfills every one of your requirements for examination, treatment and minor surgical work.

Accurate Position—Whether it's E. E. N. T., GYN, Protoscopic, GU or general work the Martin table provides the correct position.

Easy Adjustment—Height, Trendelenberg positions, rotation of the top are all made by simply operated controls.

Patient Comfort—The patient can relax completely on the Martin table's comfortable padding and durable upholstery.

Shampaine COMPANY

PLEASE SEND ME COMPLETE INFORMATION ON THE MARTIN ALL-PURPOSE CHAIR TABLE

SHAMPAINE CO., DEPT. A-1
1920 SO. JEFFERSON AVE.
ST. LOUIS 4, MISSOURI

My dealer is_____

Dr._____

Address_____

City_____ Zone____ State_____

Obesity

A problem you discuss frequently in your daily practice

One of the most perplexing problems you have today is the obese patient who will not, or cannot, remain on a strict diet. Investigational and clinical work has shown that to effect a loss of weight in the obese without interfering with their psychologic makeup one must offer them biologic products which meet the following criteria: no caloric value, sufficient volume to create the sensation of fullness, no interference with the digestive activities of the intestinal tract, and no physiologic side effects. Woodard Laboratories' DU-SO-TABS formula conforms with these criteria because of the hydrophilic substances contained in the uncoated tablets; when mixed with water these materials increase many times their original weight, thereby giving the "filling" and "satisfying" feeling and reducing the tendency toward constipation which often accompanies the reducing regimen. With this formula the appetite of the obese remains unchanged but is appeased by smaller quantities of food, therefore a strict diet is not necessary. Included in this formula are coated tablets containing 24 vitamins and minerals which are particularly essential with the reduced food intake. These ingredients have no caloric value and are not fat producing.

The DU-SO-TABS formula is supplied only through the physician.

Available in a package for a two-week regimen, listing at $4.00, and a package containing month's supply at $7.00, list.

WOODARD LABORATORIES, Inc.

2308 West 7th Street
Los Angeles 5, California

Los Angeles • San Francisco • Portland • Akron • Detroit • Dallas • Denver
Wichita • Kansas City (Mo.) • St. Louis • Baltimore • Des Plaines (Chicago)

EXAMINATION BY NATIONAL BOARD

The National Board of Examiners for Osteopathic Physicians and Surgeons conducts Parts I and II of its examination on the first Thursday and Friday of each May and December at the six approved colleges. Application blanks may be obtained from the secretary or the dean of the college, and the completed application blank, together with a passport photograph and check for the part to be taken, must be in the secretary's office by the November 1 or April 1 preceding examination.

Examinations in Part I consist of anatomy, including histology and embryology; physiology; physiological chemistry; general pathology; and bacteriology, including parasitology and immunology.

Part II consists of examinations in surgery, including applied anatomy, surgical pathology, and surgical specialties; obstetrics and gynecology; pediatrics; neurology and psychiatry; public health, including hygiene; medical jurisprudence; osteopathic principles, therapeutics, including pharmacology and materia medica.

Part III is an oral and practical examination given in Philadelphia, Chicago, Kirksville, and Los Angeles under the supervision of a chief examiner who is a member of the Board and by a panel of associate examiners. Subjects covered in Part III are anatomy; physiology; pathology; osteopathic principles, therapeutics and pharmacology; surgery; ophthalmology and otorhinolaryngology; obstetrics and gynecology; physical and clinical diagnosis; public health and communicable diseases.

Eligibility requirements are as follows: Part I, satisfactory completion of the first 2 years in an approved school of osteopathy; Part II, satisfactory completion of Part I and of the first two quarters or trimesters of the senior year in an approved osteopathic college; Part III, satisfactory completion of Part II and of an internship of 1 year approved by the American Osteopathic Association.

Address Paul van B. Allen, D.O., secretary, 1500 N. Delaware Street, Indianapolis 2, Indiana.

WHY BE INTERESTED IN CHILD GROWTH AND DEVELOPMENT?*

Alfred H. Washburn, M.D.†

In discussing child growth and development we all too frequently plunge into a presentation of height and weight curves; or we discuss intelligence scores and school achievement, or some other specific and limited aspect of child growth, without giving thought to the total problem. For most of us the goal can be simply stated. It is the better understanding of a given child—or, for that matter, of a given adult—who behaves as he does because of the experiences he has had during his whole span of growth and development.

Let us consider child growth and development not as occurring in a vacuum but progressing dynamically in a given human being, who is continuously reacting, adapting, and adjusting to all sorts of environmental factors, from conception on. We are, then, interested in whatever happens to this individual during growth.

The inevitable relationship between the growth of the child and the nature of the resulting adult represents the first and most obvious reason for the interest of the public-health worker in the topic of this symposium. But this is by no means the entire answer to our question, "Why be interested in growth and development?" At the first meeting of the Society for Research in Child Development, in 1934, its president, Dr. Robert S. Woodworth, gave a beautifully concise answer to our question. He said in part:

"The importance of child development as a field of research cannot be called in question. The physical vigor and mental health of the adult depend on the growth process of childhood and youth, as well as on the genetic constitution, which also in all logic comes within the scope of our society. The social characteristics of the adult population have to be formed in early life.

*Reprinted from *The Child*, December, 1951.

†Dr. Alfred H. Washburn is Director of the Child Research Council of Denver. He holds the rank of Research Professor of Pediatrics in the University of Colorado School of Medicine, serving also as Chief of the University's Department for the Study of Human Growth.

But to think of the child as existing simply for the purpose of becoming an adult would be false teleology from the biological standpoint and bad social evaluation as well. The growing child and the maturing youth are not mere means to an end but are entitled to full recognition in their own right. At any rate the student of child development has his eye fixed on the developmental process itself as something supremely fascinating and worthy of investigation."

The progress of research in human growth since then has served to re-emphasize continuously Dr. Woodworth's two main points. The study of growth is fascinating in itself whether one is considering the developing embryo, the baby's first year, or the adolescent boy's dramatic blossoming out into manhood. At the same time more and more evidence is accumulating to demonstrate the meaningfulness to the individual of the particular experiences that he has as he grows through infancy and the early childhood years. Thus, we may think of the health or wholeness of the young adult, his soundness as a good citizen of the world, as being dependent upon the success that he had during childhood in adapting his self, his own unique individuality, to his world. And further, we may think of the baby or child at any age being an individual already uniquely himself and deserving of our sympathetic understanding.

INDIVIDUALS VARY WITHIN THE PATTERN

In this problem of understanding the growth and development of an individual person, whether he be infant, child, or adult, there are two quite simple concepts that need to be a continuous part of one's thinking. The first is that every healthy child's development progresses according to and within the limits of the general human pattern.

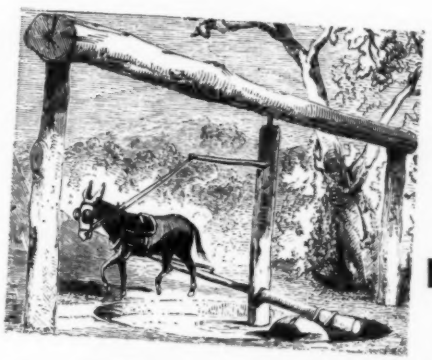
Even though this is obvious, yet it remains true that one of our important tasks in studying human growth is the clearer delineation of the human pattern. To be sure, we have a fairly reliable picture of the pattern of weight and height increase, as well as that of the changes in a good many other structures. We have also a somewhat less adequate picture of the pattern by which certain functions develop. But concerning the developmental patterns of many functions, both physiological and psychological, we are still relatively ignorant.

The second concept is concerned with the amount of variation between individuals within the uniformity of the general human pattern. Each individual is unique. Let me use a very homely illustration to bring out the fact of how completely we all accept this idea even though we may not always act in accord with it when dealing with children.

We will assume that you are to meet a friend at the railroad station. Even though there may be several hundred persons going and coming through the station you will have no difficulty in knowing which one is your friend as soon as you see him. In fact, even though he may approach you from behind, when he speaks your name you will know who he is before you see him.

We do not always give sufficient thought to the fact that his internal structures, such as heart or lungs, are just as characteristically and uniquely his as are his eyes and nose or body build. So too his less obvious physiological and psychological functions are just as characteristic for him as are his walk, his voice, or the cheeriness of his greeting. Within the limits of the general human pattern there are almost endless individual variations.

I should like to carry these thoughts about differences between individuals a step further. It is not just a question of any two of us being of different stature, or having differently shaped noses, or presenting different degrees of efficiency in the functioning of our heart and circulatory or central nervous systems. As I have suggested above, each of us represents the end product—in both structure and functioning—of a long and continuous series of interactions that have taken place during growth and adaptation. Often striking individual variations are to be found in the pathways that we have traveled in reaching our present end point. Or, put in a slightly different way, the patterns revealed by charting out the growth of a



when other external therapy seems to get **nowhere...**

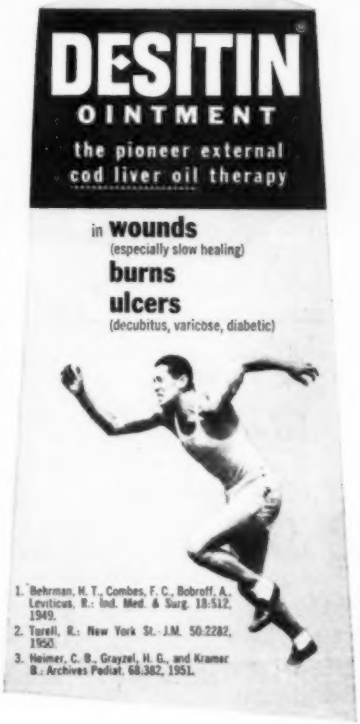
accelerate healing with

Study[1], after study[2] after study[3] corroborates the "notable"[1] success of Desitin Ointment in easing pain and stimulating smooth tissue repair in lacerated, denuded, chafed, irritated, ulcerated tissues—often in stubborn conditions where other therapy fails.

Protective, soothing, healing, Desitin Ointment is a non-irritating, blend of high grade, crude Norwegian cod liver oil (with its unsaturated fatty acids and high potency vitamins A and D in proper ratio for maximum efficacy), zinc oxide, talcum, petrolatum, and lanolin. Does not liquefy at body temperature and is not decomposed or washed away by secretions, exudate, urine or excrements. Dressings easily applied and painlessly removed. Tubes of 1 oz., 2 oz., 4 oz., and 1 lb. jars.

write for **samples** and literature

DESITIN CHEMICAL COMPANY
70 Ship Street, Providence 2, R. I.


DESITIN
OINTMENT
the pioneer external cod liver oil therapy
in wounds
(especially slow healing)
burns
ulcers
(decubitus, varicose, diabetic)
1. Behrman, H. T., Combes, F. C., Bobroff, A., Leviticus, R.: Ind. Med. & Surg. 18:512, 1949.
2. Turell, R.: New York St. J.M. 50:2282, 1950.
3. Heimer, C. B., Grayzel, H. G., and Kramer B.: Archives Pediat. 68:382, 1951.

A Lasting Investment in Modern Asepsis

Today's most modern cabinet sterilizer is designed to serve you efficiently for years to come. Its long-life 16" instrument sterilizer is available with either timer or automatic control. The Storador features four covered plastic trays. Cabinet in any standard color at no extra cost. See it at your dealer's or write for literature.

PELTON

THE PELTON & CRANE CO., DETROIT 2, MICHIGAN

given structure or the development of a given function may vary greatly from child to child.

BABIES GAIN AT DIFFERENT RATES

A nice illustration of this in the realm of structural change may be seen in the weight curves of two selected babies during their first 12 months of life. Even though they start at the same birth weight and weigh the same at 12 months, yet the curves may be quite strikingly dissimilar. For example, the first may rise very steeply in the first 1 to 4 months and then, bending sharply, show very little gain in the last 3 to 4 months. In contrast to this the second may form a more symmetrical arc, with a less steep rise at first and a more rapid rise in the second half of the year. The difference in the timing of adolescence in different children is, of course, a classic and dramatic example of variation in the patterns by which growth progresses in different but equally healthy children.

I shall assume, without further elaboration, that we all accept the existence of endless variation within the limits of the human pattern of growth. I shall assume also that we accept the fact that the individual's own characteristic pattern can be described, studied, and ultimately understood only against the background of the whole range of the human pattern. That is, a given person is tall or has a high blood pressure only relative to all other persons. And if he is 8 feet tall or has a systolic blood pressure of 200 millimeters of mercury then he is outside of the range of the healthy human pattern. But even assuming acceptance of these basic concepts one may still ask what is their significance for those of us who are dealing with the health and welfare of growing children.

WE NEED TO KNOW ABOUT THE INDIVIDUAL

During the last quarter of a century we have learned much about individual variations during growth. We have come to realize that these are meaningful for the individual—that the safeguarding of health involves some insight into the individual's unique pattern of growth—that the adequate diagnosing and treating of disease in a child necessitates knowing something of the nature of that child as well as of the peculiarities of the disease from which he happens to be suffering. For example, the difference in heart size between the smallest and largest hearts, which we have observed in healthy 8- to 10-year-old boys, is greater than the amount of increase one would usually see resulting from mild to moderately severe involvement with rheumatic fever. Or again, in boys undergoing a rapid adolescent growth spurt in both height and weight, the degree and rapidity of increase in heart size may closely approximate that seen in a preadolescent boy with progressive enlargement due to active rheumatic carditis. It is obvious that the possibility of correctly diagnosing pathologic enlargement of the heart implies an appreciation of these variations and growth patterns.

Although this is a fair illustration of the importance of studying human growth, yet it tells only part of the story. Public health is concerned with prevention as well as with the diagnosis and cure of disease. Prevention implies being able to look ahead—being able to predict with some measure of reliability. For example, preventing caries and defects in deciduous teeth necessitates a knowledge of the timing of the development of these teeth. And this, in turn, leads to concern with the adequacy of the mother's prenatal diet as well as with that of the baby after birth. Parenthetically one might add that our knowledge of such food requirements is still far from complete. Prevention of a number of so-called congenital anomalies of the heart, eyes, palate, or limbs of the expected baby similarly implies a knowledge of their pattern and varying speed of development at different stages. With this knowledge we can make every effort to protect the mother from infectious diseases and dietary deficiencies, particularly during the time of the baby's development in the uterus when they are most apt to distort the orderly progress of that part. We may accept, therefore, the thesis that the adequate

diagnosis and prevention of disease is greatly dependent upon an understanding of human growth; but let us go a step further.

WHAT LEADS US TO STUDY CHILD DEVELOPMENT?

Most of us in such a group as this have accepted our responsibility for attempting more than the prevention of disease. To be sure, we must continue actively in this never-ending campaign against the diseases that plague mankind, but we must also learn how to educate people positively for health and happiness. We recognize that there is a difference between the mere absence of disease and the presence of robust good health. We feel sure that robust good health and stable adaptation to our environment make us more valuable as well as more delightful citizens of a democracy. But, alas, we are not nearly so sure just how one becomes and remains a healthy and happy citizen. The desire for this knowledge serves as a powerful stimulus for studies of the growth and development of individual children, such as those in which some of us are now engaged. I wish it were possible to give a complete record of the growth and development of just one subject followed in the Child Research Council for 10 or 15 years, but it takes the staff a whole morning to review one such record. Instead, I shall just suggest the kinds of questions raised by such studies.

Jane is now a young woman of 18 years. She was a relatively small baby, born of parents whose size was somewhat below the average for the population. Throughout her childhood her height remained in the lowest 10 percent of our group of healthy girls. Her weight was always well below the tenth percentile, and tended to lag behind the tenth percentile curve in its rate of increase. Her thinness and slow growth were a source of worry to her parents, to teachers, to visiting nurses, and to physicians.

And yet her health record shows that she had fewer illnesses than the average and that her recovery from illness was usually prompter than that of the average child. Moreover, her intellectual development and her degree of emotional maturity were well ahead of the average. She usually seemed to be a pleasant, happy, and active child. Today she is a charming, popular, and bright young college woman, healthy and well-adjusted to her environment.

LONG-TIME STUDIES HELP

What factors in her constitutional make-up or in her early development should have served to tell us that she was progressing satisfactorily toward a healthy, happy young adult life? How can we distinguish between the naturally small, slowly growing child and the one who is small or slow to develop because of dietary deficiency, chronic illness, emotional handicaps, or a combination of such causal factors? Answers to such questions can come only from long-time studies of individual human beings.

We need to study each child as a whole integrated organism. Changing structure and function in a given child are really inseparable. Thus we must study structure—its changes during growth, its use to the individual, and its variations in different children—in such a manner as to lead to maximum opportunity to relate the structure studied to the total behavior, to the individuality of the person.

MANY FACTORS ARE INVOLVED

For instance, the pattern of a given child's changing bone structure at adolescence is closely related to the change in the basal metabolic rate; to increased food intake; to the appearance of secondary sex characteristics; in girls, to the onset of the menses; and to various other physiological and psychological changes.

However, both the chronological age at which these events occur and the precise pattern, involving speed of progress and duration of these changes, will vary greatly in different children. Each child during health follows his own pathway at his own speed. Thus the safe interpretation of such findings as "bone age" or "basal metabolism" must depend upon some familiarity with the particular individual and his own characteristic mode of progress. I do not mean to imply that this is a simple matter, as my next illustration will show.

When Clinical Proof is Your Guide
DOHO RESEARCH PRODUCTS
are indicated . . .

Now !!!

The NEW O-TOS-MO-SAN

is a Specific in Suppurative Ear Infections—both Acute and Chronic, also External Otitis because it is . . .

BACTERICIDAL . . . (GRAM-POSITIVE—GRAM-NEGATIVE)—it KILLS BACTERIA, including BACILLUS PROTEUS, B. PYOCYANEUS, E. COLI, BETA HEMOLYTIC STAPHYLOCOCCUS AUREUS (Isolated from ear infections and found resistant to antibiotics in laboratory tests)

and

FUNGICIDAL . . . it KILLS FUNGI—including ASPERGILLI, TRICOPHYTON, MONILIA, and MICROSPORUM

NON-TOXIC • NON-IRRITATING
STABLE • CLEAR

PROVED EFFECTIVE AGAINST ANTIBIOTIC RESISTANT STRAINS OF ORGANISMS
Substantiating Laboratory and Clinical data in press.

FORMULA:
A NEW, improved process, using Doho glycerol base, results in a chemical combination having these valuable properties.
Urea ..... 2.0 GRAMS
Sulfathiazole ..... 1.6 GRAMS
Glycerol (DOHO) Base 16.4 GRAMS
(Highest obtainable spec. grav.)

Challenge !!!

TRY NEW O-TOS-MO-SAN in your most stubborn cases, the results will prove convincing.

DOHO CHEMICAL CORP., 100 Varick Street, New York 13, N. Y.

AURALGAN—After 40 years STILL the auralgesic and decongestant • RHINALGAN—safe nasal decongestant. Acts locally NOT systemically.

FEATURING—FAST, COURTEOUS SERVICE On—
SEVENTY Top Quality Dispensing Products

VITAMINS — MINERALS — AMINOS — COMBINATIONS
(Your patients need all three)

**Laxatives, Rectal Suppositories, Hematinics,
Chlorophyll & Garlic Preparations and
Many other interesting products**

Sold "Direct to You ONLY" at lower WHOLESALE PRICES. An extra good dispensing margin made possible.

New Catalogue and Samples on request.

ETHICAL SPECIALTIES CORPORATION

326 W. Kalamazoo Ave. Kalamazoo, Mich.

WHAT OF HIS HOME LIFE?

Jim is a slender boy of 14 years, not yet adolescent. In infancy and early childhood it seemed as though he was almost never completely well. He was allergic to many substances, he had innumerable minor colds, and many attacks of more severe respiratory tract infections. His recovery from illness was often slow and far from satisfactory. His eating habits, particularly in the preschool years, were erratic, leading to uncertain food intake even though his parents and his doctor supposedly did their best to give him an adequate diet.

But there were other important factors at work throughout his infancy and early childhood. His mother, who appeared, superficially, to be doing everything possible for him, was actually hostile to him from early infancy. A careful and thoughtful study of his regime—partly in retrospect—led us to the conclusion that she was often severely punitive in carrying out treatment for his endless symptoms. Sometimes as many as 10 to 12 medications had been used in one illness of a week or 10 days. Not only was he overtreated in nearly every sickness, but even had several quite unnecessary operations, urged by the mother and carried out by an obliging doctor with too little awareness of the possible mother-child relationship.

At 14 years he is in somewhat better health, though far from robust, and overconscious of potential disease. He is a far from happy boy, poorly adjusted in his neighborhood and school.

One may well ask how much of his early illness was precipitated by his mother's hostility and his resulting lack of love or security. Could his present status have been foreseen by the time he was 4 or 5 years old? If so, what could have been done then? Was he already seriously injured, physically, physiologically, and psychologically before he reached school age? How early in the life span must we be applying that form of preventive medicine which seeks to foster and encourage a positive program for health? And, finally, how shall we teach doctors and nurses and nutritionists to be aware of these problems so that they may avoid the error that Jim's doctor made of assuming that the mother was simply overconscientious—an error that led to his being used as the mother's accomplice in punishing Jim?

The importance of the effect of the personality characteristics of both parents and child on the total functioning of the individual infant or child, in health as well as in disease, is now generally accepted. Although investigation into the developments of these traits in the early years is difficult, yet we know that the first 5 to 6 years represent a most important period for study if we are to understand adequately the behavior of the school child, the adolescent, or the young adult. Thoughtful observation of the interplay between the baby and his environment, starting with the mother, may give valuable clues concerning the individual's basic traits, and their development or modification, as he attempts to adapt to his environment. In a play setting, whether it be dolls, or clay, or paints, or just free play, the preschool-age child often reveals much of himself—his fears, his loves, his anxieties, his aspirations, the concepts of his little world, and just as in the more purely physical aspects of growth, so here, too, we need less emphasis on the mere measurement of status at a given moment and more emphasis on what the child is becoming, as well as on the "how" and the "why" of the becoming. Furthermore, we need more awareness of and more concentration on the interrelatedness of changes in structure, in physiological functioning, and in the development of emotional and other aspects of personality.

As we continue our studies in the Child Research Council, we are following the same individuals through childhood into their adult lives. We have now a score of young adults and five second-generation babies. Year by year the kind of evidence I have been discussing becomes more convincing. Individual variations have meaning. The pattern by which each child progresses is unique; but it is orderly for that child, if growth is healthy. The child's own pattern holds meaning not only concerning what sort of child he is now,

but also in regard to what sort of older child or adult he is in the process of becoming. There is, of course, equally convincing evidence that environmental influences — the nature of the setting within which growth is occurring—may alter the pattern to a greater or lesser extent in different children. More studies on more persons, carried on through more than one generation, are urgently needed in order to provide adequate knowledge in this field. The usefulness of such knowledge to public-health workers in the future cannot be questioned. In fact, an adequate program for promulgating positive health measures is dependent upon a better understanding of human growth and adaptation.

HEMORRHAGE IS UNPREDICTABLE . . .
Authorities recognize that a simple trickle may continue indefinitely, and prove as baffling as a furious fountain of blood which suddenly stops.[1]
KOAGAMIN'S action is normally predictable because of its direct action on the blood. KOAGAMIN acts fast—in minutes—unlike vitamin K, useful only in cases of prolonged prothrombin time. In such cases, vitamin K may be used with KOAGAMIN to effect faster control.
1. De Lee Greenhill, Principles and Practices of Obstetrics, 8th Ed., p. 803, W. P. Saunders, 1943.
KOAGAMIN®
(An aqueous solution of oxalic and malonic acids for parenteral use.)
In 10 cc. diaphragm-stoppered vials.
Comprehensive dosage chart and literature on request.
THERAPEUTICALLY effective in many hemorrhagic conditions
PREOPERATIVELY minimizes oozing, assures a clearer field for surgery
POSTOPERATIVELY aids control of secondary bleeding . . . quickly, safely
Chatham
Available Through Your Physician's Supply House or Pharmacist
CHATHAM PHARMACEUTICALS, INC. NEWARK 1, NEW JERSEY, U.S.A.

WORLD-WIDE DECLINE IN MORTALITY*

The striking advances in medicine and public health are saving millions of lives each year all over the world. The impact of this rapid progress is clearly reflected in a comparison of mortality rates before and after World War II. Nineteen countries recorded a decline of 9 percent or more in its age-adjusted death rate between prewar and postwar years, and nine showed declines of 20 percent or more. Comparisons based upon age-adjusted death rates eliminate the influence of differences in age distribution and, therefore, give a much more accurate picture of recent mortality trends than crude death rates. In Australia, for example, the crude death rate actually rose 3 percent between 1937 and 1947 because of the increasing proportion of aged in its population; on the other hand, the age-adjusted rate fell 11 percent in the same period. In addition, the age-adjusted rates make possible comparisons between levels of mortality in different countries.

Of the Western countries under review, England and Wales and Scotland showed the largest reduction in mortality. There the age-adjusted death rate dropped 27 percent between the prewar and postwar periods, but the declines were almost as great in Norway and Northern Ireland. The age-adjusted death rate for England and Wales is now one of the lowest in the world; only Norway, The Netherlands, Sweden, and New Zealand — traditionally the world's healthiest countries—have somewhat lower rates. All of these favored countries have rather small and homogeneous populations.

The prewar to postwar decline of mortality in the United States amounted to 23 percent, the age-adjusted death rate coming to only 9.01 per 1,000 in 1948. Although this is a remarkably low figure, considering the size of our population and its great social and economic diversity, the rate is nevertheless fully one third above the lowest shown in the table (6.64 for Norway in 1948).

The marked reduction in the death rates of the underdeveloped countries is one of the most significant trends in the postwar world. In Japan, economically more advanced than most of the poorer nations, the age-adjusted death rate fell 30 percent between 1934-1936 and 1948. The largest part of this decline occurred in the short period following the end of the war, when the occupying forces of the United States put into effect, on a large scale, the new developments in medicine and public health. Even more striking was the experience of Ceylon, where an anti-malarial campaign was an important factor in its markedly reduced mortality during the postwar years. Substantial, though not as dramatic, were the declines in Mexico, Costa Rica, Chile, Venezuela, and Puerto Rico. Puerto Rico's record of a 40 percent reduction in the crude death rate between 1937-1939 and 1947-1948 is particularly noteworthy. In India the indications are that the death rate dropped about one fifth between the prewar and postwar periods.

Declines in the death rates from infectious diseases are largely responsible for the greatly reduced mortality of the postwar period. In the United States, for example, the crude death rate from

*Reprinted from *Statistical Bulletin*, Metropolitan Life Insurance Company, May, 1951.

That there is real danger of poisoning by boric acid absorption through areas of dermatitis has been learned during our study of the unexpected deaths of infants in Baltimore in the past two years. The usual history is that of development of a diaper rash in an infant under one year of age and treatment of the dermatitis by repeated application of boric acid
BRAND "A"
CONTAINS BORIC ACID
BRAND "B"
CONTAINS BORIC ACID
Diaparene CHLORIDE

NO BORIC ACID!

Diaparene® CHLORIDE

(METHYL BENZETHONIUM CHLORIDE)

BACTERICIDAL • WATER-MISCIBLE • SAFE[2,3]

The ever-present possibility of boric acid poisoning by transcutaneous absorption, when the skin is broken, indicates the physician's and nurse's need of making sure to recommend to every mother a "diaper rash" dusting powder and ointment containing *no boric acid.*

1. Fisher, R. S. "Notes from The Office of the Chief Medical Examiner," Baltimore, Md., April, 1951.
2. Benson, R. A., et al.: "The Treatment of Ammonia Dermatitis with Diaparene," J. Ped. 34:1-49, Jan., 1949.
3. Niedelman, M. L., et al.: "Ammonia Dermatitis. Treatment with Diaparene Chloride Ointment," J. Ped. 37:5-762, Nov., 1950.

PHARMACEUTICAL DIVISION, HOMEMAKERS' PRODUCTS CORPORATION, NEW YORK 10

pneumonia and influenza fell from 90.3 per 100,000 in 1937-1939 to 40.9 in 1947-1948—a reduction of 55 percent. In England and Wales the decline amounted to 41 percent and in Canada to 47 percent. Comparable declines occurred in many other Western countries. Even in Japan the mortality from these respiratory diseases dropped 44 percent. Sulfa drugs, penicillin, and other antibiotics are evidently being used widely and effectively.

Crude death rates for several causes of death reflect increasing control of the infectious diseases in many countries. Particularly impressive are the figures for tuberculosis—a disease which was once a major killer all over the world. Now several countries, including the United States, have tuberculosis death rates as low as 30 per 100,000, and only a few have rates over 100 per 100,000. The communicable diseases of childhood have been all but eliminated as causes of death in many parts of the world. Infancy, the most dangerous year of life, is far safer than it was only 10 years ago. Maternity, too, has been rendered much safer with the use of the new antibiotics and other measures. In many countries only 1 or 2 mothers die in every 1,000 live births.

The concerted efforts now being made for the control of infections on a world-wide basis promise a great humanitarian achievement. However, these efforts are only at their beginning. The full advantages in healthier and happier lives will come with the more intensive development of the resources of the world. We know from the history of the West that better health and economic advancement go hand in hand.

THE CHANCES OF DYING FROM IMPORTANT CAUSES*

Within the few years from 1939-1941 to 1948 there have been appreciable increases in the chances of eventual death from the cardiovascular-renal diseases or from cancer. On the other hand, the chances of dying from pneumonia and influenza or from tuberculosis have decreased rapidly; for fatal accidents there was little change.

Under current mortality conditions, the over-all chance of eventual death from some cardiovascular-renal disease is about 3 in 5. However, a detailed inspection of figures shows that these chances are somewhat higher for women than for men and that they rise steadily with advance in age. For example, in 1948 a newly born white male had 558 chances in 1,000 of eventually dying from some cardiovascular-renal condition, compared with 579 per 1,000 for a newly born white female. By age 60 these chances rose to 636 per 1,000 for white males and 643 for white females. The same general pattern prevailed in 1939-1941, but the figures were at materially lower levels, particularly at the ages up to middle adult life.

For white males the rise in the chances of eventual death from the cardiovascular-renal conditions from 1939-1941 to 1948 was due to two factors. First, there was an upward trend in the death rate for these diseases among white males at the productive ages. Second, with the general improvement in mortality, larger proportions are surviving to the higher ages where the cardiovascular-renal diseases take their greatest toll. However, in the case of white females the rise in the chances of death from the cardiovascular-renal diseases may be attributed to the second factor alone, since their death rate from these conditions has been decreasing.

There was a rather marked increase in the chances of eventual death from cancer in the short period from 1939-1941 to 1948. These chances rose from 113 to 137 per 1,000 for white males at birth and from 139 to 158 per 1,000 for white females at birth. Since the figures do not vary much with advance in age, it may be generalized that with the continuance of current mortality conditions the chances of eventual death from cancer are 1 in 7 for white males and 1 in 6 for white females.

For both white males and females the

*Reprinted from *Statistical Bulletin*, Metropolitan Life Insurance Company, June, 1951.

chances of eventual death from pneumonia and influenza are now about 35 per 1,000. Only a decade ago—in 1939-1941—these chances were appreciably higher, at about 60 per 1,000. Further reductions in the chances of death from pneumonia and influenza are in sight with the continued improvement in the treatment of these conditions.

Although the chances of death from tuberculosis were already low in 1939-1941, there have been further decreases since then. According to the mortality record for 1948, the chances at birth were only 26 per 1,000 for white males and 13 for white females.

It is a sad commentary on present-day conditions that the chances of eventual death from accidents exceeds the combined chances of death from pneumonia, influenza, and tuberculosis. For white males at birth the chances of death from accidents were 69 per 1,000 in 1948—not much below the corresponding figure for 1939-1941. Although white females at birth had much lower chances of death from accident—namely, 52 per 1,000 in 1948—their situation had hardly changed since 1939-1941. As a cause of death, accidents follow only the cardiovascular-renal diseases and cancer and rank far ahead of the major infectious diseases.

Death is inevitable, but the cause of death is subject to control. Largely as a result of the preventive and curative measures that have brought the infectious conditions under control, the probability of surviving into midlife and old age has risen sharply. This rise has brought with it, quite naturally, an increase in the chances of dying from the degenerative conditions typical of the later years of life. However, it is possible to achieve improvements even in this situation by postponing the onset of these conditions and by prolonging the lives of those already afflicted. Such, indeed, is the purpose of present research into the health problems arising from the aging process.

When your patient complains he's

..tired
..rundown
..has no appetite

...and there is no organic or pathologic reason for his complaint

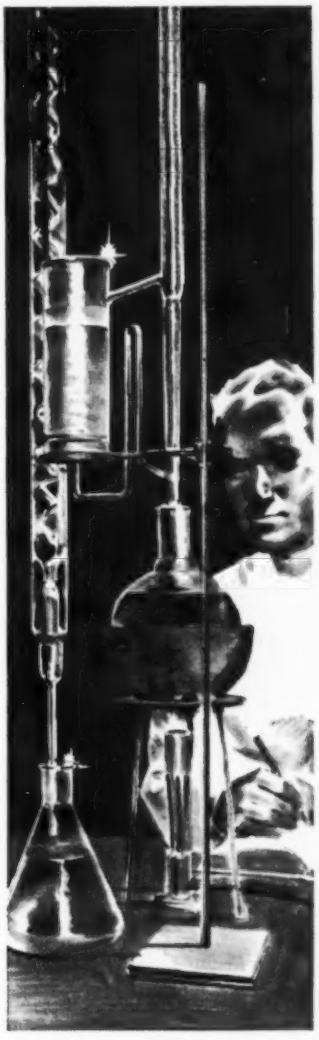
...nutritional deficiencies
may be suspect

The struggle for survival, in our present-day, highly mechanized and overly competitive world, places a tremendous drain on the nervous system and requires rich red blood of high oxygen carrying capacity to meet its demands. When the nutritional status of persons in such an environment (and it is not limited to city dwellers) ebbs just a little ... fatigue takes its toll. HEMAFUSION (DPS Formula 111) provides essential members of the B-Complex (Vitamin B_1, Vitamin B_{12}, and Niacin) with Iron as a nutritional supplement in a base of specially prepared stomach and duodenal substances. It is often most effective in these cases. Have a supply of HEMAFUSION on hand for YOUR patients ... ORDER DPS Formula 111 TODAY.

specify dartell
hemafusion
dps formula 111

AVAILABLE IN BOTTLES OF:
90 tablets . . List Price $ 4.00
500 tablets . . List Price $21.00

DARTELL LABORATORIES
1226 South Flower Street, Los Angeles 15, Calif.



THE POSTWAR CANCER RECORD*

The postwar period has seen a greatly intensified effort on all fronts against the cancer problem. In the programs of public health education, the stress is on early detection and treatment. Along with these campaigns there has been a more emphatic and expanded educational effort with practicing physicians and an increase in diagnostic facilities. An increasing number of special cancer hospitals are in operation. The medical and dental schools are concentrating attention on the problem, and State health departments are giving it more emphasis in their programs. At the same time cancer research has been greatly stimulated by both private and public funds. All of this activity raises the question regarding its effect upon the mortality from cancer. Although it is still too early to look for a definitive answer, some encouraging signs are already evident in the postwar record of the Industrial policyholders of the Metropolitan Life Insurance Company.

A comparison of death rates for the periods 1946-1947 and 1949-1950 shows reductions in mortality from the malignant neoplasms† among white females at ages 25-74 years, and only slight changes at ages 1-24 years. In the case of white males there was an improvement at ages 1-14 years and only a small increase at ages 15-24 years. However, the death rate rose appreciably (12.6 percent) at ages 25-44 years, but for the higher-age groups the rates increased by about 3½ percent.

The favorable developments in the cancer picture are most evident when the recent trend of mortality is studied according to the primary site of the malignant growth. For the accessible sites as a group, both sexes experienced declines in mortality from 1946-1947 to 1949-1950, white males by 2.4 percent and white females by 7.2 percent. Among white females, for each of the specific accessible sites listed, except the breast, the trend in mortality was downward; in the case of the breast there was practically no change in the death rates.

*Reprinted from *Statistical Bulletin*, Metropolitan Life Insurance Company, May, 1951.

†This includes cancer (all forms), leukemia, and Hodgkin's disease.

EXAMINATION AND TREATMENT TABLE

MODEL "B," TYPE 4

Where there is a need for an extremely flexible examination and treatment table, the new Ritter Multi-Purpose Table, Model B, Type 4, is "made to order." All neck and head positions can be accommodated with the easily adjustable headrest. The Type 4 Table is readily adjusted to any required position. A touch of the toe on the foot controls and the motor-driven hydraulically operated base raises and lowers patients to convenient treatment level quietly and smoothly. The new Ritter Examination and Treatment Table has an extreme low position of 24½", enabling infirm, arthritic and aged patients to get on the table more easily. A hand tilt lever allows a tilt of 30° head low. With head section extended the table is 76" in length and 23" wide. 180° rotation is possible on a sturdy base, designed to prevent accidental tilting.

Patients enjoy the comfort of the new Ritter Examination and Treatment Table. They rest on resilient sponge rubber cushions covered with vinyl coated nylon fabrics.

Optional equipment such as stirrups can be provided at slight additional cost.

Be sure to ask your Ritter dealer for a demonstration of this new Ritter Multi-Purpose Table.

FOR ADVANCED EQUIPMENT LOOK TO **Ritter**
COMPANY INCORPORATED
RITTER PARK, ROCHESTER 3, N. Y.

For cancer of the uterus the death rate dropped by 11.5 percent in the short period under review. The only important site to show a reduction in mortality among white males is the buccal cavity and tonsils, where there was a 13 percent improvement.

In the case of the inaccessible sites treated as a unit, white females experienced a 1.1 percent decrease in death rates from 1946-1947 to 1949-1950, but white males, on the other hand, show a 4 percent rise. However, it is encouraging to find that both sexes were favored with reductions in mortality for such specific sites as the stomach, the intestines and duodenum, the rectum and anus, the liver and biliary passages, a residual category consisting of other digestive organs and the peritoneum, and the bladder.

There are several important inaccessible sites that show sizable increases in their cancer death rates. Most important among these are cancers of the lung, pleura, mediastinum, bronchus and other respiratory parts, and the pharynx. Taken together, the death rate for these sites increased by 30.4 percent for white males from 1946-1947 to 1949-1950 and by 10.3 percent for white females. Important elements in this situation are the improved diagnostic techniques, the increasing alertness of the physician to the condition, and, to some extent, the discovery of such cancers incidental to mass X-ray examinations. However, it is not yet apparent to what extent these and other unknown factors are contributing to the marked upward trend in these cancers. Both sexes also had a rise in mortality from cancer of the pancreas. The death rate for cancer of the ovary and other female genital organs went up by about one sixth within the postwar period.

For both white males and white females, there was a marked rise in the death rate from leukemia, probably as a result of improved diagnosis. The recent change in the mortality from Hodgkin's disease was immaterial.

While fundamental research into cancer is being intensified, the primary emphasis in the campaign against the disease is still on early recognition and treatment. Although the success of this cause cannot be judged solely by this short insurance record, the reductions in mortality for many sites of cancer are encouraging. With greater efforts in this direction, the cancer situation may also improve for many of the sites that have hitherto shown increases in mortality.

ADDITIONAL PROTECTION FOR HEALTH OF AMERICAN WORKERS

A comprehensive program for additional protection of the health of American workers is being developed by the Public Health Service, Federal Security Administrator Oscar R. Ewing announced recently.

The Service's Division of Industrial Hygiene has been renamed the Division of Occupational Health and has broadened its activities to include a number of investigations into health programs of working men and women not previously covered by the Division.

An important new concern of the Division is the investigation of health hazards in the production, processing and handling of radioactive materials and radiation-producing processes, Mr. Ewing said. "These materials and processes are being employed by such a great variety of industrial establishments today, many of them small, that the closest attention must be given to the development and, what is more important, the intelligent use of proper safeguards. . . . The use of radioactive materials is essential to today's production effort, but we have the big educational job of making sure that the health of people working with these materials is not endangered."

Mr. Ewing emphasized that the program of the reconstituted Division will not be concerned solely with such occupational health hazards, but will deal with "all problems affecting the health of workers." He added, "All too often the conditions under which workers live may do much more to tear down their

health than the conditions under which they work. Air pollution, for example, may not be limited to the immediate neighborhood of a factory; it can envelop a whole community.

"The traditional principles of preventive medicine employed by the Public Health Service are being directed to those environmental factors which affect workers' health."

The Division is preparing to make additional intensive studies of the health requirements of special occupational groups, Mr. Ewing said. He cited Public Health Service studies on silicosis, which have resulted in substantial control of that disease, and current studies of potential health hazards in chromate production.

The Division of Occupational Health also is preparing to study emotional and other psychological factors affecting the health and output of workers.

Employee health programs have been under study by the Division for some time. These studies will be continued and expanded to determine the extent to which they meet the needs of workers.

The new designation—Division of Occupational Health—was adopted to reflect more accurately the Division's function of promoting better health for the individual workers. The term "industrial" in the earlier designation led many to believe that the Division was concerned primarily with large industry, and more particularly, with large plants. The Division's purpose is, in fact, to render service through the States to widely diverse occupational groups of all sizes and kinds.

The term "hygiene" suggested emphasis on personal prevention of disease only, whereas the Division is interested not only in disease prevention but also in promoting a condition of physical, mental and social fitness beyond the mere absence of disease or infirmity.

Let's try FELSOL for Mrs. . . .
That's all . . . FELSOL!
During prolonged treatment of underlying causes in ASTHMA, HAY FEVER, CHRONIC BRONCHITIS, that's all many a doctor prescribes to provide patients with convenient, effective, safe symptomatic relief from paroxysmal respiratory distress.
FELSOL affords prompt relief too in spasmodic cough and neuralgic headache.
Convenient file card, clinical samples and literature gladly sent upon request.
AMERICAN FELSOL COMPANY
LORAIN, OHIO
Please send me your physician's index card, samples and literature on FELSOL.
Doctor.....
Address.....
City.....State.....

NEW LIFE EXPECTATION FOR "BLUE BABIES"*

Dorothea Andrews†

Prospects for a longer, healthier life for the Nation's "blue babies" are being brightened by a plan to provide surgical and hospital care for these children in regional heart centers.

The first such center, now in operation in Connecticut, has been arranged with the Connecticut State Department of Health at the Grace-New Haven Community Hospital. Patients are accepted not only from Connecticut but experimentally from Rhode Island as one of the States in the region.

Other centers are being planned in the East, South, Midwest, and Southwest, and on the West Coast, to provide full geographic coverage for the entire country. The program is expected to be in full swing by 1952. The centers will serve not only "blue babies" but children with other congenital heart malformations that respond to surgery.

Despite the possibilities of the plan Children's Bureau doctors warn that it will not cure all cases of congenital heart malformation and that it will help provide care for relatively few children each year. Because of physical limitations of the proposed centers and because of lack of funds, the regional heart-center plan, even when well under way, may reach only a small percentage of the children who need the delicate heart operation.

Not every child with a malformation of the heart can be operated on for it successfully. Extensive preliminary tests are often required to determine which children may benefit.

The Children's Bureau is planning to spend $100,000 this year, beginning July 1, 1951, to foster the program through allocations to official State crippled children's agencies, which in turn pay the cost of care at the regional centers. Preliminary estimates are that surgical and hospital care and related services will cost on the average approximately $1,000 for each baby treated. This will permit meeting the needs of about 100 of these children in a year.

In 1948, 7,335 children under 1 year of age died from congenital malformations of the cardiovascular system (heart and blood vessels)—6.5 percent of the total of 113,169 infant deaths that year.

*Reprinted from *The Child*, October, 1951.
†Dorothea Andrews is chief of the press and radio section, Division of Reports, Children's Bureau. She is a former newspaperwoman, most recently a reporter on the Washington Post.

THE LEADER SINCE 1907

for quick, accurate blood pressure readings

YES, for 44 years, *Tycos* Aneroid* has meant the ultimate in quick, accurate blood pressure readings. 44 years of scientific experience and know-how are packed into *your* Tycos Aneroid. Many Tycos Aneroids have given over a quarter-century of dependable service and are still going strong. Here are 8 good reasons why your next sphyg should be a Tycos Aneroid:

1. **GUARANTEED TO REMAIN ACCURATE** . . . unless misused!
2. **10-YEAR GUARANTEE** . . . Manometer readjusted free of charge—*even if you drop it!* (cost of broken parts extra)
3. **TIME-SAVING** . . . Zip open case . . . Circle Cuff around arm . . . Hook . . . *and it's on!*
4. **POCKET-SIZE** . . . Weighs only 19 oz. . . . Easily fits coat pocket.
5. **GREATER PROTECTION DURING USE** . . . Gage securely attached to Cuff minimizes accidental dropping.
6. **EASIER TO USE** . . . Hook Cuff fits any size or shape adult arm . . . Can't balloon at edges.
7. **ROOMY ZIPPER CASE** . . . Easily holds the completely, ready-to-use instrument. No fussy packing!
8. **FULL RANGE DIAL** . . . Reads up to 300 mm.

On display at your surgical supply dealer's. Taylor Instrument Companies, Rochester, N. Y., and Toronto, Canada. *Registered Trade-Mark

ONLY $42.50 Complete with popular Tycos Hook Cuff, and zipper case to slip easily into your pocket.

Tycos Aneroid

TAYLOR INSTRUMENTS MEAN ACCURACY FIRST

Up to a few years ago, there was little hope that "blue babies" could live very long. But the now-famous operation by which the surgeon constructs a "detour" around a partly obstructed artery has given these babies new life expectation. Operations are done for other types of congenital heart disease also, but specialists in heart surgery are still few.

CHANCES FOR SUCCESS ARE GOOD

A study of the first 828 patients operated upon by Dr. Alfred Blalock and his associates for congenital heart malformations between November 1944 and August 1949 shows that a child, selected on the basis of preliminary tests, who undergoes the "blue baby" operation has an 85-percent chance of coming through the operation greatly improved and an equally good chance of maintaining the improvement.

Representatives of State health agencies have described specific situations in which no facilities were available in the State to treat congenital heart malformations, and in which it was difficult or impossible to arrange for admission of the babies to centers in other States.

The State crippled children's agency will find children with congenital heart disease through its clinics or by referrals from doctors, parents, well-child conferences, or other individuals or groups.

Once the child is selected for surgery, the cost of his care at the center is financed by the best method the State crippled children's agency can devise. This may involve the use of funds made avaliable for the regional centers by the Children's Bureau. It may be that the State agency itself has funds that can be used, or the care may be financed in part by voluntary agencies, or by the parents, if they are financially able to do so.

The home State agency makes arrangements for transportation of the child to the regional center, either through use of State, local, or Federal crippled children's funds available, or through payments by the child's parents. One or both parents, or someone who can act in their place, must accompany the child to the regional center and remain in the city with him while he undergoes hospitalization, in an effort to assure a degree of emotional stability during the pre- and post-operative period.

After the child has his operation, the center may arrange for his transfer to a convalescent home near the hospital, to stay until the doctor is satisfied that the child is ready to return home.

Finally, a complete report of the child's history at the center is sent to the home State crippled children's agency. That agency arranges any necessary follow-up, obtains medical supervision if this is needed, and becomes responsible for the child's return to the center for check-ups at 3-, 6-, or 12-month intervals, as requested by the center. In addition, the crippled children's agency in the home State may provide psychological guidance, social

service, or nutritional advice to the family if needed.

Details of the first center plan have been worked out by Children's Bureau doctors in conjunction with the Connecticut State Department of Health. Dr. Stanley H. Osborn, Commissioner of the Connecticut State Department of Health, has been a guiding factor in the plan's preparation.

APPLICATIONS FOR MEMBERSHIP

KANSAS

Doctor, Francis Lee, (Renewal) Agra
Eustace, Laurence B., (Renewal) Box 71, Tescott

KENTUCKY

Mayfield, W. Orville, (Renewal) 514 Fincastle Bldg., Louisville 2

MAINE

Clough, R. William, (Renewal) 166 Silver St., Waterville

MARYLAND

Augur, Morris C., (Renewal) 901 Pershing Drive, Silver Spring

NEW YORK

Lamia, M. Stephen, (Renewal) 463 54th St., Brooklyn 20

OHIO

Collins, Walter L., Jr., (Renewal) 239 W. Fourth St., Marysville

PENNSYLVANIA

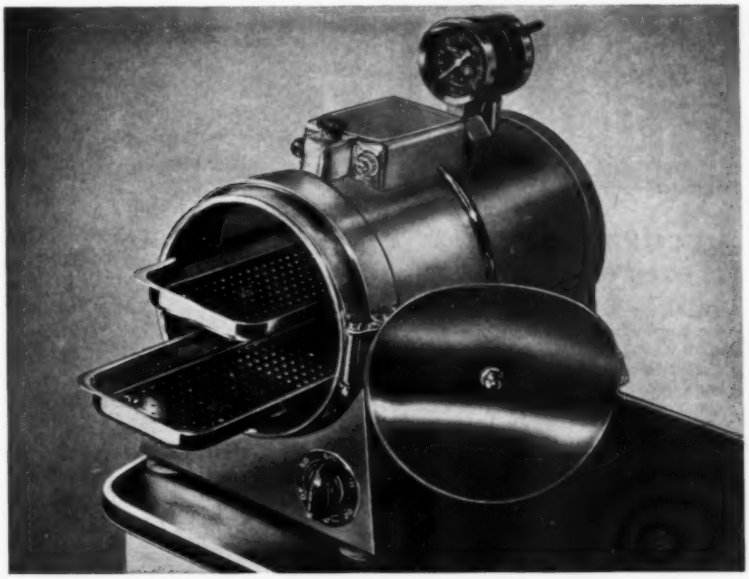
Eisenhut, Lemar F., Jr., (Renewal) Randolph St., Box 455, New Hope

WEST VIRGINIA

Bland, Andrew J., Jr., (Renewal) Eleanor
Walker, Arnold E. T., (Renewal) Route 60, Rainelle
Hahn, Earl C., (Renewal) 518 Second St., St. Marys

CHANGES OF ADDRESS AND NEW LOCATIONS

Ackley, Edward J., from North Kansas City, Mo., to Immaculate Conception Clinic, 3917 N. Cleveland Road, Kansas City 16, Mo.
Angert, Irvin J., PCO '51; 4225 Lancaster Ave., Philadelphia 4, Pa.
Ball, C. S. P., from Boca Raton, Fla., to 2501 N. W. 79th St., Miami 47, Fla.
Benedict, Helen E., from Bath, Pa., to 1840 Main St., Northampton, Pa.
Bernheisel, James L., PCO '51; West Side Osteopathic Hospital, 1253 W. Market St., York, Pa.
Berry, Dan E., from Clear Lake, Iowa, to 501 S. Highland Ave., Pittsburgh 6, Pa.
Beyer, Robert B., from 4916 E. Belknap Ave., to 825 N. Sylvania, Fort Worth 3, Texas
Biggers, E. R., from Thomaston, Maine, to 1319 Washington Ave., Portland 5, Maine
Boven, Bernard D., from Montebello, Calif., to Zieger Osteopathic Hospital, 4244 Livernois Ave., Detroit 10, Mich.
Bowers, William C., from Topanga, Calif., to 621 S. Spring St., Los Angeles 14, Calif.
Bubeck, Roy G., Jr., from 1239 Fulton St., E., to 2003 Division Ave., S., Grand Rapids 7, Mich.
Bubeck, Roy G., Sr., from 1239 Fulton St., E., to 2003 Division Ave., S., Grand Rapids 7, Mich.
Carey, Edwin C., from 4040 Oakman Blvd., to 6259 W. Fort St., Detroit 9, Mich.
Cassity, Elton E., from 18 E. 32nd Terrace, to 1324 Main St., Kansas City 6, Mo.
Chappell, Earl, Jr., from Sharp Park, Calif., to 75 Birch St., Montara, Calif.
Coats, William H., from Winnsboro, Texas, to Box 1866, Hawkins, Texas
Cornell, Philip H., from Wyandotte, Mich., to Flat Rock Clinic, Flat Rock, Mich.
Crawford, Jack W., from 603 Wilson Bldg., to Preston Clinic, 6117 Berkshire Lane, Dallas 9, Texas
Cunningham, J. Ralph, from 416 Pierce Ave., to 615 Hathaway, Houston 6, Texas
Dodson, Dale, DMS '51; Riverside Osteopathic Hospital, 165 George St., Trenton, Mich.
Dott, Harper L., Jr., from Huntington Park, Calif., to 529 E. Rosencrans Ave., Compton, Calif.
Dunbar, Willo V., from Meadow Bridge, W. Va., to Bradley, W. Va.
Edgerton, John C., from Des Moines, Iowa, to Battle Creek Hospital, Battle Creek, Iowa
Elston, Harry E., Jr., from Kenilworth & Woodland, to 1569 Woodland Ave., N. E., Warren, Ohio
Enderby, Wayne C., from Columbus Office Bldg., to Northern Bldg., Green Bay, Wis.
Epsten, Robert M., from 4307 Ohio St., to 3994 Park Blvd., San Diego 4, Calif.



Now! Castle "777" Autoclave Beats Boiling 4 Ways

1. SAFER! Whenever you enter or expose the bloodstream, you need high temperature, pressure sterilization* . . . because boiling doesn't kill spore-bearers or viruses! But Castle's "777" Speed-Clave—sterilizing at over 250°F. with 15 to 20 lbs. pressure—gets them *all!* And your patients get true sterilization safety.

2. FASTER! "777" reaches spore-killing temperature in ⅓ the time it takes a boiler to reach only 212°F. (7 minutes from cold start! Or 3 minutes if warm). Then it kills all microbial life quicker than boiling kills bacteria only.

3. EASIER! You set the time and temperature desired. After that it runs itself without attention. 3 safety devices with water cut-off.

4. ECONOMY! "777" is priced no higher than cabinet type *boiler* sterilizers! Save 40%: buy unsterile dressings, autoclave them in the Speed-Clave . . . also, your instruments last longer: less rust and dulling.

Attractive all-stainless steel, the "777" Speed-Clave uses current only when autoclaving. Hence saves electricity and lessens heat and steam in the office.

For demonstration, phone your Castle dealer, or write: Wilmot Castle Co., 1150 University Ave., Rochester 7, N. Y.

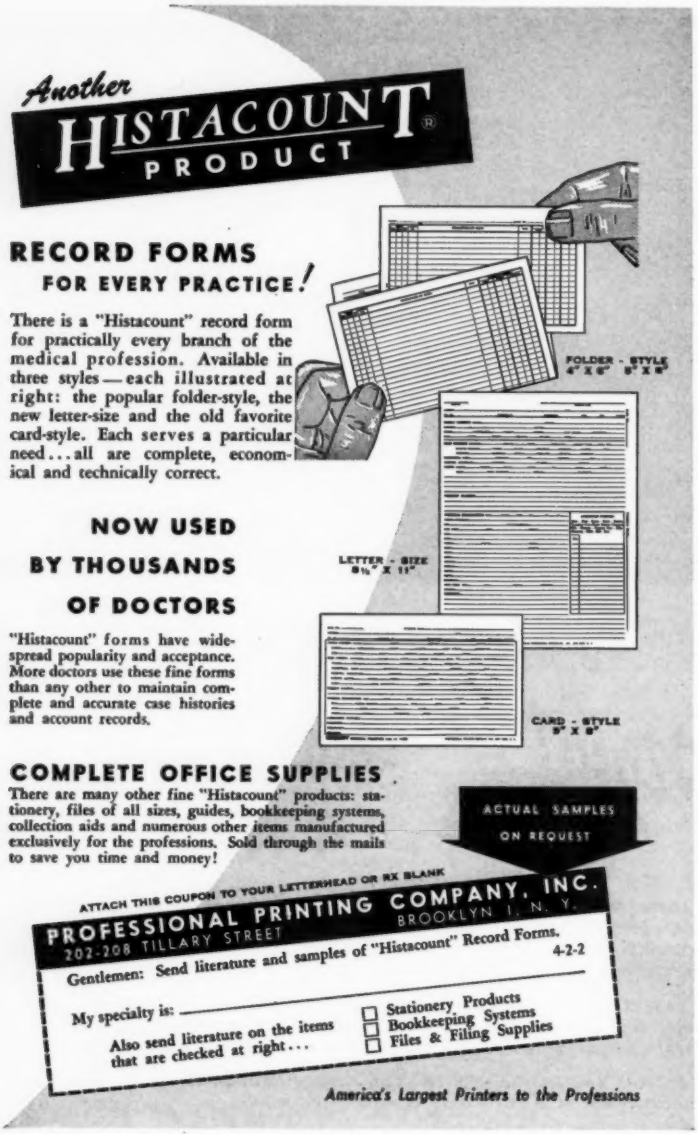
**Bibliography and reprints on request.*

Castle "SPRING-SEAL" DOOR

Only Castle has this ultra safe, flexible door (tested to 80 lbs. pressure).

It is the secret of the "777" success because it keeps total weight down to 15 lbs., allowing high speed and low cost.

Castle LIGHTS AND STERILIZERS


Another
HISTACOUNT®
PRODUCT
RECORD FORMS
FOR EVERY PRACTICE!
There is a "Histacount" record form for practically every branch of the medical profession. Available in three styles — each illustrated at right: the popular folder-style, the new letter-size and the old favorite card-style. Each serves a particular need... all are complete, economical and technically correct.
FOLDER - STYLE
4" X 6" 5" X 8"
LETTER - SIZE
8½" X 11"
CARD - STYLE
3" X 5"
NOW USED
BY THOUSANDS
OF DOCTORS
"Histacount" forms have widespread popularity and acceptance. More doctors use these fine forms than any other to maintain complete and accurate case histories and account records.
COMPLETE OFFICE SUPPLIES
There are many other fine "Histacount" products: stationery, files of all sizes, guides, bookkeeping systems, collection aids and numerous other items manufactured exclusively for the professions. Sold through the mails to save you time and money!
ACTUAL SAMPLES
ON REQUEST
ATTACH THIS COUPON TO YOUR LETTERHEAD OR RX BLANK
PROFESSIONAL PRINTING COMPANY, INC.
202-208 TILLARY STREET BROOKLYN 1, N. Y.
Gentlemen: Send literature and samples of "Histacount" Record Forms. 4-2-2
My specialty is:
Also send literature on the items that are checked at right...
Stationery Products
Bookkeeping Systems
Files & Filing Supplies
America's Largest Printers to the Professions

Faxon, William B., from Ottawa, Ill., to 1048 Laurel Ave., Bowling Green, Ky.
Fogelberg, Ernest H., from Long Beach, Calif., to 2106 Redondo Beach Blvd.. Redondo Beach. Calif.
Ford, Roberta Wimer, from 434 17th Ave., N., to 4710 36th Ave., N. E., Seattle 5, Wash.
Fulton, Robert J., from Kansas City, Mo., to Box 57, Norborne, Mo.
Garner, Bennett, from 406-09 Mortgage Guarantee Bldg., to 219 Red Rock Bldg., 187 Spring St., Atlanta 3, Ga.
Geb, William B., from Trenton, Mich., to Broken Bow, Okla.
Gibson, R. H., from Marysville, Ohio, to 40 W. Third Ave., Columbus 1, Ohio
Greenberg, Alvin, from 3787 S. Vermont Ave., to 9911 S. Figueroa St., Los Angeles 3, Calif.
Halterman, Robert W., from 16 W. High St., to 117 N. Main St., London, Ohio
Heist, Albert D., from 207 Guard Bldg., to 457 Castle St., Geneva, N. Y.
Hilton, Spencer C., from Dayton, Ohio, to Garden City Osteopathic Hospital, 30548 Ford Road, Garden City, Mich.
Hixson, Darwin H., from Kansas City, Mo., to Velma, Okla.
Jibben, Robert Ellis, KCOS '51; 415 S. Davis, Kirksville, Mo.
Johnson, Delbert F., from Nevada, Iowa, to Madison Street Hospital, 1620 18th Ave., Seattle 22, Wash.
Johnston, Sturgis E., from Illmo, Mo., to 210 Illinois Ave.. Peoria 4, Ill.
Kani, E. Edward, from Grosse Isle, Mich., to Detroit Osteopathic Hospital, 12523 Third Ave., Detroit 3, Mich.
Kimmelman, Abraham, PCO '51; 211 S. 53rd St., Philadelphia 39, Pa.
Kirsh, Harold, from 435 Marlton Pike, to 922 Marlton Pike, Erlton, N. J.
Kirton, Thomas E., PCO '51; Metropolitan Hospital, 241 N. 18th St., Philadelphia 3, Pa.
Klein, Erle Lyle, from Chapel Hill, N. C., to 4501 99th St., S., Eugene, Ore.
Koenigsberg, Abraham, PCO '51; Metropolitan Hospital, 241 N. 18th St., Philadelphia 3, Pa.
Kokolski, George M., from 62 Spring St., to 60 Main St., Manville, R. I.
Limanni, Charles, from Marshalltown, Iowa, to Broadway, Toledo, Iowa
Linck, T., Jr., from Detroit, Mich., to Romulus Hospital, 36911 Goddard Road, Romulus, Mich.
Lipton, Nathan, from New York, N. Y., to Veterans Administration Hospital, Fargo, N. Dak.
Luly, Lucian L., from 356 Highland Ave., to 601 Highland Ave., Box 2146, San Bernardino, Calif.
Lyle, John M., from River Oaks Manor, to 6 Howard St., Colfax, Iowa
Lyons, Earl K., from 51 Randolph Ave., to Professional Bldg., Kevens Ave., Elkins, W. Va.
Marshall, Bruce E., from 1481 Sherbrooke St., W., to 1468 Bishop St., Montreal 25, Que., Canada
Masters, Jacqueline V., from 1937 Book Tower Bldg., to 608 Scherer Bldg., Detroit 26, Mich.
Maupai, F. P., from Orlando, Fla., to The Helen Mar, 2421 Lake Pancoast Drive, Miami Beach 40, Fla.
Mauthe, M. R., from Hubbard, Ore., to Box 176, Canby, Ore.
Maxfield, William L., from Fort Lauderdale, Fla., to Royal Palm Road, Boca Raton, Fla.
McCollum, David M., KCOS '51; South Bend Osteopathic Hospital, 118 S. William St., South Bend 2, Ind.
Miller, Jack M., from Detroit, Mich., to 3433 Central Ave., Indianapolis 5, Ind.
Miller, Jay R., PCO '51; 822 W. Locust St., York, Pa.
Miller, Norton H., from Detroit, Mich., to 2451 S. Telegraph Road, Dearborn, Mich.
Montague, J. Leo, from Gainesville, Fla., to 1535 Margaret, Jacksonville 4, Fla.
Mouer, Philip L., PCO '51; 515 W. King St., York, Pa.
Moylan, George T., from Ecorse, Mich., to 213 W. Fourth St., Benson, Ariz.
Nelson, C. R., from 3814 Broadway, to 3816 Broadway, San Antonio 9, Texas
Orlowski, Francis J., Jr., from Chaffee, Mo., to 7838 Highway 80 E., El Paso, Texas
Ornstein, Walter, from 4002 Park Blvd., to 3994 Park Blvd., San Diego 3, Calif.
Parisi, Nunzio E., from Lansing, Mich., to Dunlap, Iowa
Park, P. L., from Des Moines, Iowa, to Battle Creek Hospital, Battle Creek, Iowa
Parsons, H. F., from London, England, to 1899 California St., San Francisco 9, Calif.
Partin, Lyle P., from St. Joseph, Mo., to Union Star, Mo.
Patenaude, Edward W., PCO '51; 1519 N. Franklin St., Philadelphia 22, Pa.
Perraud, George O., Jr., from Columbus, Ohio, to 272 Frances St., Teaneck, N. J.
Pike, Arthur E., from 1833 American Ave., to 1911 Cedar Ave., Long Beach 6, Calif.
Reid, Donald R., PCO '51; Detroit Osteopathic Hospital, 12523 Third Ave., Detroit 3, Mich.
Rice, Verne L., from Bay City, Mich., to 4 Jones Ave., Kittery, Maine
Rogers, H. M., from Chenoa, Ill., to Box 175, Harrison, Mich.
Salzberg, Herbert, from 149-20 90th Ave., to 87-76 150th St., Jamaica 2, L. I., N. Y.
Schiavone, Frank, Jr., KCOS '51; Bashline-Rossman Osteopathic Hospital & Clinic, Corner Pine & Center Sts., Grove City, Pa.
Schwartz, H. Paul, from Grove City, Pa., to Bridgeport, Mich.
Seydler, Wayman A., from Phoenix, Ariz., to Tepee Clinic, 411 W. Second St., Casa Grande, Ariz.
Simmons, Bennett C., from 3290 Eucalyptus Ave., to 1018 45th Way, Long Beach 7, Calif.
Slobotnick, Manuel H., PCO '51; 2494 W. 79th Ave., Philadelphia 38, Pa.
Somerville, William A., Jr., from Philadelphia, Pa., to Lakeside, Hewitt, N. J.
Stillings, Shirley R., from Glendale, Calif., to 2223 Colorado Blvd., Los Angeles 41, Calif.
Streitenberger, D. W., from Ponca City, Okla., to 512 Bryant Bldg., Kansas City 6E, Mo.
Swiencki, Bernard, from 5035 Lakewood Ave., to 10439 E. Outer Drive, Detroit 24, Mich.
Thwaites, Walter G., from Muskegon, Mich., to Burton Heights Osteopathic Hospital, 1922 Division Ave., S., Grand Rapids 7, Mich.
Tompkins, Bruce C., from Ithaca, N. Y., to Detroit Osteopathic Hospital, 12523 Third Ave., Detroit 3, Mich.
Walsh, Edward T., from 299 N. Main St., to 69490 N. Main St., Richmond, Mich.
Weil, George L., from 2 N. Sheridan Road, to 1866 Sheridan Road, Highland Park, Ill.
Whinney, Robert A., from Jefferson Court, to 1700 Walnut St., Philadelphia 3, Pa.
Wilder, Floyd W., from Kansas City, Mo., to 512 Main St., Box 32, Hermiston, Ore.
Willoughby, Thomas Marsh, from Schaller, Iowa, to Jamieson Clinic, 1622 W. 19th St., Sioux City 17, Iowa
Wilson, Everett W., from San Antonio, Texas, to Drawer A, Portland, Texas
Wooster, Ralph L., from Newington, Conn., to 73 Meadow St., Naugatuck, Conn.
Wright, Lulu Herbert, from 137 S. Institute St., to 302 S. Thornton St., Richmond, Mo.
Zinner, Lawrence H., PCO '51; Metropolitan Hospital, 241 N. 18th St., Philadelphia 3, Pa.

CLASSIFIED ADS

RATES PER INSERTION: $2.00 for 20 words or less. Additional words 10 cents each. 25c for box number.

TERMS: Cash with order, please.

COPY: Must be received by 1st of preceding month.

ADDRESS all box numbers c/o THE JOURNAL, 212 E. Ohio St., Chicago 11, Illinois.

PRACTICE FOR SALE: Excellent practice of osteopathic physician. Two and one-half year lease to fine office—exceptionally low rental. Equipment included. Champaign, Illinois. All inquiries to Thomas & Mulliken, 30 Main St., Champaign, Illinois.

DOCTOR WANTED—Country location in Maine, twenty miles to doctor or hospital. Sell residence-office; details on request. Will introduce. Box 1521 THE JOURNAL.

WANTED: Anesthetist with qualifications for certification. 35 bed general hospital. Traverse City Osteopathic Hospital, Traverse City, Michigan.

LOOKING FOR A PUBLISHER? Write for Free Booklet OS telling how we can publish your book. All subjects considered. New authors welcome. Vantage Press, 230 West 41st St., New York.

RESIDENCY IN RADIOLOGY: Immediate opening A.O.A. approved residency. Certified radiologist, both diagnostic and therapy training. For particulars contact J. W. Tedrick, D. O., Lakeside Hospital, Kansas City, Missouri.

FOR SALE: Cameron Heartometer—Good as new. First check for $250.00 takes it. UNION MEDICAL CLINIC, 207 Market St., Newark 2, N. J.

PHYSICIAN WANTED: to take over very active general practice in Western Michigan. Five room office well equipped on ground floor in new building. Near osteopathic hospital. R.N. as office nurse. Am leaving to study specialty. Excellent proposition. Box 2521 THE JOURNAL.

FOR SALE: Unusual opportunity for a qualified surgeon to own his own registered 25 bed hospital, brick construction, in good agricultural and industrial area of the southwest. Several referring doctors, but none doing surgery. All inquiries answered promptly. 1528 THE JOURNAL.

GENERAL SURGEON, including orthopedic and urological surgery desires an affiliation with group. Eligible for Board and capable of an administrative position. Box 2525 THE JOURNAL.

RADIOLOGIST WANTED: Fifty bed hospital, diagnostic and therapeutic work, new equipment, volume of work done assures good annual income. Green Cross General Hospital, 15 Broad St., Akron, Ohio.

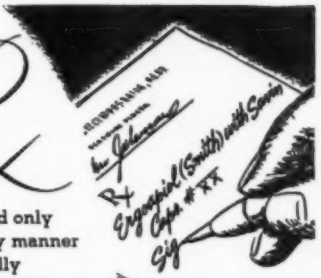
WANTED: Osteopathic Physician, Certified E.E.N.T., Surgical Resident, for opening November 1953. Write Staff Secretary, Bangor Osteopathic Hospital, Bangor, Maine.

WANTED: Recommended licensed Iowa man or woman osteopathic physician. Take over practice for Month of May. Town 7000. Only osteopathic physician. May then consider lease or sale. Box 2523 THE JOURNAL.

FOR SALE: X-ray and Clinical Laboratory in industrial city of 1,000,000 population. Established twelve years. All modern equipment. Annual income approximately $20,000.00. Write Box 2526 THE JOURNAL.

FOR SALE: Spinalator Table purchased in 1947. Write or call Dr. Kenneth C. Gearhart, 321 Market St., Clearfield, Pa. Phone 5-3322.

Only on your Rx



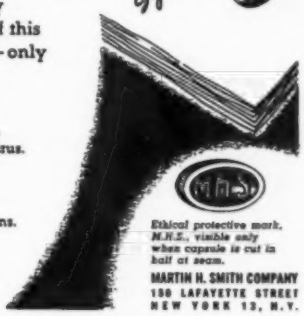
When prescribing Ergoapiol (Smith) for your gynecologic patients, you have the assurance that it can be obtained only on a written prescription, since this is the only manner in which this ethical preparation can be legally dispensed by the pharmacist. The dispensing of this **uterine tonic,** time-tested ERGOAPIOL (Smith)—only on your prescription—serves the best interests of physician and patient.

INDICATIONS: Amenorrhea, Dysmenorrhea, Menorrhagia, Metrorrhagia, and to aid involution of the postpartum uterus.

GENERAL DOSAGE: One to two capsules, three to four times daily—as indications warrant.

In ethical packages of 20 capsules each, bearing no directions.

Literature Available to Physicians Only.



Ethical protective mark, M.H.S., visible only when capsule is cut in half at seam.

ERGOAPIOL (SMITH)

MARTIN H. SMITH COMPANY
150 LAFAYETTE STREET
NEW YORK 13, N.Y.

1952 Convention
Atlantic City
July 14-18

★ **BOTH** *suitable for public laundering:*

Teckla GOWNS for Your OFFICE PATIENTS: No. 3G PLAIN CLOTH gowns *and* No. 2G KRINKLE CLOTH gowns.

(The No. 2G gowns require NO IRONING)

Careful tests prove that our beautiful Krinkle Cloth (crepe) gowns will "take" repeated trips to the public laundry. Teckla's famous Plain Cloth gowns are especially designed to withstand everything any public laundry can give them.

TECKLA WHITE GOWNS
for OFFICE PATIENTS . . .
No. 2G KRINKLE CLOTH (requires no ironing) and No. 3G PLAIN CLOTH
6 for $13.50; 12 for $25
3 dozen or more at $24 per dozen

Your patients will appreciate the immaculate whiteness, easy comfort of Teckla office gowns. A trial order will convince you that our Doctors' Office Coats are just what you want.

***Write for FREE STYLE FOLDERS on our DOCTORS' OFFICE COATS**

Backs open 12"; 24"; or full length of 48".
Actual BUST MEASURE of garments:
Size 1 (Small) 42"
Size 2 (Med.) 52"
Size 3 (Large) 60"
Extra TIES:
50 yards for $1.00

POSTAGE PAID on CASH ORDERS

THIS COUPON will save your time in ordering
TECKLA GARMENT CO., 26 Southbridge St., Worcester 1, Mass.
Gentlemen: Please send us the following quantities of TECKLA PATIENTS' OFFICE GOWNS:
No. 2G; Size 1.....; Size 2.....; Size 3.....
No. 3G; Size 1.....; Size 2.....; Size 3.....
(Backs open; 12 inches.....; 24".....; or full length of 48"
EXTRA TIES:.....yards Send C.O.D..... or Postpaid.....
NAME.....
Address.....
.....

SEDATION AND EUPHORIA FOR NERVOUS, IRRITABLE PATIENTS

Use **VALERIANETS-DISPERT** Reg. U. S. Pat. Off.

Each Chocolate Coated Tablet Contains Ext. Valerian (highly concentrated) 0.05 Gm. dispergentized finely subdivided for maximum efficiency

TASTELESS, ODORLESS, NON-DEPRESSANT SEDATIVE and EUPHORIC

VALERIANETS-DISPERT are indicated in cases of nervous excitement and exhaustion, anxiety and depressive states, cardiac and gastrointestinal neuroses, menopausal and menstrual molimena, insomnia.

Dose: 1 or 2 tablets t.i.d. — Bottle of 50 and of 100 tablets

At All Prescription Pharmacies

STANDARD PHARMACEUTICAL CO., INC. • 1123 Broadway, New York

For Intestinal Dysfunction
NUCARPON®
Each tablet cont: Extract of Rhubarb, Senna, Precip. Sulfur, Peppermint Oil, Fennel Oil in activated charcoal base.

For making Burow's Solution U.S.P. XIV
WET DRESSING Use
PRESTO-BORO®
(Aluminum Sulfate and Calcium Acetate)
POWDER IN ENVELOPES — TABLETS —
For treatment of Swellings, Inflammations, Sprains

For Pulmonary Conditions
TRANSPULMIN®
3% solution Quinine with 2½% Camphor for Intramuscular Injection.

For **CONSTIPATED BABIES**

ACCEPTED COUNCIL ON FOODS AND NUTRITION AMERICAN MEDICAL ASSOCIATION

A gentle laxative modifier of milk. One or two tablespoonfuls in day's formula — or in water for breast fed babies — produce marked change in stool. Send for samples.

BORCHERDT MALT EXTRACT CO.
217 N. Wolcott Ave. Chicago 12, Ill.

Borcherdt MALT SOUP *Extract*

Pain-Relieving...
Soothing...
Decongestive...

NUMOROIDAL SUPPOSITORIES

EPHEDRINE HYDROCHLORIDE 0.22%
BENZOCAINE 5.00%
IN A SPECIAL EMULSIFYING BASE

Supplied in boxes of 12, individually packaged in cellophane. May be carried in pocket or purse with complete safety. No refrigeration necessary.

NUMOTIZINE, Inc., 900 N. Franklin Street, Chicago 10, Illinois

OCCY-Crystine *the comprehensive hypertonic saline with* ***TRIPLE ACTION***

1. **LAXATIVE—CATHARTIC**—often increasing susceptibility of intestine to stimulation from defecating centers;
2. **CHOLAGOGIC**—relaxing the sphincter of Oddi;
3. **DIURETIC**—gentle, indirect, non-toxic.

Write for Professional Supply and Literature

OCCY-Crystine **LABORATORY—SALISBURY, CONN.**

RIASOL in PSORIASIS

Despondency, severe neuroses and even suicide may result from the humiliation caused by psoriasis. Hence the best treatment for the mental condition is to clear up the disfiguring skin patches with effective local treatment.

RIASOL does double duty. *Directly*, it clears up or greatly improves the cutaneous lesions of psoriasis in the great majority of cases. *Indirectly*, it removes the psychological cause of the despondency and neurosis.

RIASOL is effective because of its deep action in the layers of the epidermis where the lesions of psoriasis are located.

BEFORE USING RIASOL

AFTER USING RIASOL

THOUSANDS PRESCRIBE RIASOL

RIASOL CONTAINS 0.45% MERCURY CHEMICALLY COMBINED WITH SOAPS, 0.5% PHENOL AND 0.75% CRESOL IN A WASHABLE NON-STAINING, ODORLESS VEHICLE

SEND FOR A CLINICAL PACKAGE

PROVE RIASOL YOURSELF

SHIELD LABORATORIES

Rx Tr. Belladonna ʒii
Urolithia gs. ad ʒviii
Sig ʒii 2.9.D.c cup
warm water ½ hr.AC.

UROLITHIA

BETTER CONTROL with LESS CONTROL
in CHRONIC URINARY INFECTIONS

A self-acidifying methenamine urinary antiseptic permitting high dosage without toxicity. Quickly soothes inflamed mucosa. Bacteriostatic against E. Coli, S. Albus, S. Aureus. Requires no periodic blood tests, etc. May be prescribed alone or with suitable antispasmodics and sedatives as individually required—tr. belladonna, tr. hyoscyamus, phenobarbital, etc. Especially useful for older patients. Send for samples.

COBBE PHAR. DIV.—BORCHERDT MALT EXTRACT CO.
217 N. Wolcott Ave. Chicago 12, Illinois

"PUBLIC HEALTH REPORTS" TO BE PUBLISHED MONTHLY NEXT YEAR

Beginning in January, 1952, *Public Health Reports* will be published monthly. Two other technical publications of the Public Health Service—the *Journal of Venereal Disease Information* and the *CDC Bulletin*—are being merged with it.

The merger has come about as the result of an extended study of the Public Health Service's publishing activities. The new journal is designed to carry out more efficiently and economically the Public Health Service's responsibilities for disseminating scientific information on matters of health.

The new *Public Health Reports* will be concerned with the technical and professional aspects of public health practice, with problems of health administration, and with research in these fields. It will include substantially the types of material that have been appearing in the three present journals and the monthly Tuberculosis Control Issue of *Public Health Reports*. There will be more emphasis, however, on administrative practice, program development, and applied research aspects and less emphasis on bench research and clinical material not rather directly related to public health practice.

As has been true with each of the present journals, the pages of the new *Public Health Reports* will be open, on merit, to any responsible author. General editorial guidance will be provided by a Board of Editors composed of individuals of recognized competence and professional stature drawn from both within and outside the Federal service.

Every effort will be made to furnish the new *Public Health Reports* to representative organizations in public health and its related fields. Most of the readers on the mailing list are affiliated with organizations to which free distribution can legally be made. They will continue to receive the new journal either directly or through these organizations.

The first issue of the new *Public Health Reports* and an application form for a free subscription will be sent to readers now on the free lists for technical periodicals. After they have had an opportunity to review the new *Public Health Reports* and to consider its usefulness in their work, readers who wish to remain on the lists and receive the new periodical regularly should complete the application and send it in as soon as possible. This will allow time to revise the lists for mailing the second and subsequent issues.

The new *Public Health Reports* will also be available by paid subscription from the Superintendent of Documents, Government Printing Office.

Books Received

OSTEOPATHY IN THE CRANIAL FIELD. Edited by Harold I. Magoun, A.B., D.O., M.Sc. Cloth. Pp. 244, with illustrations. Price $10.00. The Journal Printing Company, Kirksville, Mo., 1951.

THE PATHOGENESIS OF TUBERCULOSIS. By Arnold R. Rich, M.D., Baxley Professor of Pathology, The John Hopkins University School of Medicine; Pathologist-in-Chief, The Johns Hopkins Hospital, Baltimore. Ed. 2. Cloth. Pp. 1028, with illustrations. Price $15.00. Charles C Thomas, Publisher, 301-327 E. Lawrence Ave., Springfield, Ill., 1951.

HEART DISEASE. By Paul Dudley White, M.D., Executive Director, National Advisory Heart Council; Consultant to the Massachusetts General Hospital, Boston; Recently Clinical Professor of Medicine, Harvard Medical School. Ed. 4. Cloth. Pp. 1015, with illustrations. Price $12.00. The Macmillan Company, 60 Fifth Ave., New York 11, 1951.

NUTRITION AND CLIMATIC STRESS With Particular Reference to Man. By H. H. Mitchell, Professor of Animal Nutrition, University of Illinois, and Marjorie Edman, Research Assistant in Animal Nutrition in Charge of Literature Survey, University of Illinois. Cloth, Pp. 234, with illustrations. Price $6.75. Charles C Thomas, Publisher, 301-327 E. Lawrence Ave., Springfield, Ill., 1951.

ENVIRONMENT AND HEALTH. By Federal Security Agency, Public Health Service. Paper. Pp. 152, with illustrations. Price $.75. Federal Security Agency, Public Health Service, Washington 25, D. C., 1951.

"Pressoplast" In the Treatment of PHLEBITIS
Thrombophlebitis
Phlebothrombosis

Natural or Flesh Colored
Adhesive Cotton E-L-A-S-T-I-C Bandage
"Contura" BANDAGE
skin protecting medicated

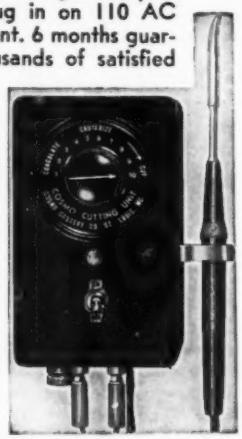
VARICOSITIES ARTHRITIS
LEG ULCERS of toe, foot, ankle
LEG ECZEMAS and knee joints

Write for Literature and Reprints
Medical Fabrics Co., Inc.
10 Mill Street Paterson 1, N. J.
MFRS. OF ELASTIC BANDAGES AND DRESSINGS

BET-U-LOL
HUXLEY PHARMACEUTICALS
521 FIFTH AVENUE, NEW YORK, N. Y.

The Ethical Topical Anodyne that Controls . . . PAIN in muscle, nerve and joint inflammations
CONTAINS CHLORAL HYDRATE • MENTHOL METHYL SALICYLATE

COSMO CUTTING UNIT
with
Finger-Tip Heat Control
Compact. Easy to use. Blade operates thermally at temperature that can be regulated for all cutting, cauterization and coagulation procedures. Plug in on 110 AC or DC current. 6 months guarantee. Thousands of satisfied users.



Safe! No spark gap. Operates on heat alone. Permits use of ethyl, chloride or similar agents.

ONLY $42.50 COMPLETE

Literature Available.

COSMO CAUTERY CO.
4215 Virginia Ave.
St. Louis 11, Mo.

Suggest this topical therapy between office visits for

RHEUMATIC ACHES·PAINS

Muscle Soreness and Stiffness
Lumbago and Neuritis Discomfort

Between professional visits, your patients should welcome this topical analgesic, counter-irritant, decongestive home therapy. Suggest that they massage the affected area with Musterole.

Musterole with massage helps increase topical circulation creating needed heat right where applied—and brings fresh blood to the affected parts for symptomatic relief. A clean white rub that will not stain the clothing.

The *only* rub made in 3 different strengths: Children's Mild for tender skin. Regular for adults and Extra-Strong Musterole for more distressing cases.

MUSTEROLE®

APHORISMS OF DR. CHARLES HORACE MAYO AND DR. WILLIAM JAMES MAYO. Collected by Fredrick A. Willius, M.D. Cloth. Pp. 109. Price $2.75. Charles C Thomas, Publisher, 301-327 E. Lawrence Ave., Springfield, Ill., 1951.

SURGERY OF THE OBLIQUE MUSCLES OF THE EYE. By Walter H. Fink, M.D., Minneapolis, Minnesota. Cloth. Pp. 350, with illustrations. Price $8.75. The C. V. Mosby Company, 3207 Washington Blvd., St. Louis 3, 1951.

HYPERTENSION A Manual for Patients. By Irvine H. Page, A.B., M.D., Director, Research Division, Cleveland Clinic Foundation, Cleveland, Ohio. Revised Sixth Printing. Cloth. Pp. 101, with illustrations. Price $3.00. Charles C Thomas, Publisher, 301-327 E. Lawrence Ave., Springfield, Ill., 1951.

MEDICAL MILESTONES. By Henry J. L. Marriott, M.D. Cloth. Pp. 293. Price $3.50. The Williams & Wilkins Company, Mt. Royal and Guilford Aves., Baltimore 2, 1951.

A TRANSLATION OF GALEN'S HYGIENE (DE SANITATE TUENDA). By Robert Montraville Green, M.D., Emeritus Professor of Anatomy, Harvard Medical School, Boston, Massachusetts. Cloth. Pp. 277. Price $5.75. Charles C Thomas, Publisher, 301-327 E. Lawrence Ave., Springfield, Ill., 1951.

THE BATTLE FOR MENTAL HEALTH. By James Clark Moloney, M.D. Cloth. Pp. 105. Price $3.50. Philosophical Library, Inc., 15 E. 40th St., New York, 1951.

ELECTROCARDIOGRAPHIC STUDIES IN NORMAL INFANTS AND CHILDREN. By Robert F. Ziegler, M.D., Associate in Cardiology, In Charge of Section of Pediatric Cardiology, Henry Ford Hospital, Detroit, Michigan. Cloth. Pp. 207, with illustrations. Price $10.50. Charles C Thomas, Publisher, 301-327 E. Lawrence Ave., Springfield, Ill., 1951.

FORMULARY AND THERAPEUTIC GUIDE. By R. Gordon Douglas, Chairman. Cloth. Pp. 355. Price $3.00. Appleton-Century-Crofts, Inc., 35 W. 32nd St., New York 1, 1951.

TEXTBOOK OF REFRACTION. By Edwin Forbes Tait, M.D., Ph.D., Associate Professor of Ophthalmology, Temple University School of Medicine; Attending Surgeon (Ophthalmology), Temple University and Montgomery Hospitals; Fellow, Philadelphia College of Physicians, and American Academy of Ophthalmology and Otolaryngology; Member, The Pan-American Association of Ophthalmology, and The Association for Research in Ophthalmology. Cloth. Pp. 418, with illustrations. Price $8.00. W. B. Saunders Company, West Washington Square, Philadelphia 5, 1951.

PHYSICAL MEDICINE AND REHABILITATION FOR THE AGED. By Walter S. McClellan, M.D., Medical Director, The Saratoga Spa, Saratoga Springs, New York, Associate Professor of Medicine, Albany Medical College, Albany, New York. Paper. Pp. 81, with illustrations. Price $2.00. Charles C Thomas, Publisher, 301-327 E. Lawrence Ave., Springfield, Ill., 1951.

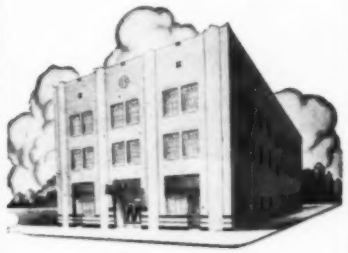
TONSIL AND ALLIED PROBLEMS. By Roy H. Parkinson, M.D., F.A.C.S., Chief of Eye, Ear, Nose, and Throat Department, St. Joseph's Hospital, San Francisco, California. Cloth. Pp. 432, with illustrations. Price $12.00. The Macmillan Company, 60 Fifth Ave., New York 11, 1951.

UROLOGY

Special attention to Prostate conditions, including Trans-Urethral resection.

GASTRO-INTESTINAL

Special attention to resistant colon and rectal conditions.



(Established 1933)

Devine Bros. Hospital
918 Oak, Kansas City 6, Mo.

New
2-WAY RELIEF IN
SINUSOIDAL HEADACHES

A new approach to relief of sinusoidal headaches! Wilco's Rhino-Thrycin (1) opens up the nasal avenues of ventilation and drainage; (2) combats infection by triple anti-bacterial activity. Now in a single preparation! Send for samples and literature.

CONTAINS:
Desoxyphedrine 1%; Tyrothrycin .02%; Chlorophyll 10%; Phenylmercuric Acetate 1:24000. ***In 1 oz. dropper bottles, 8 oz. and 16 oz. for nasal sprays.***

WILCO
RHINO-THRYCIN
anti-bacterial and decongestant

FREE SAMPLE AND LITERATURE
WILCO LABORATORIES
800 N. Clark St., Chicago 10, Ill.
Send sample and literature on Rhino-Thrycin
Dr. .....
Address .....
City ..... State.....
Please enclose professional card.

Gomco No. 910
Portable Explosion-Proof Suction and Ether Unit

Gomco No. 911
Portable Explosion-Proof Suction Unit

WHY NOT BE SURE YOU'RE GETTING EXPLOSION-SAFE EQUIPMENT?

GOMCO Explosion-Proof Suction and Suction and Ether Units Nos. 910 and 911 Bear this Seal

It's your all-important assurance of safety in the operating room! Gomco units No. 910 and 911 are listed by Underwriters' Laboratories, Inc. for use in atmospheres containing ethyl-ether vapors (Class 1, Group C). Both units bear CSA approval No. 9253. Don't leave explosion-safety or performance to chance—specify Gomco to your dealer.

GOMCO®
SURGICAL MANUFACTURING CORP.
830M E. FERRY STREET BUFFALO 11, N. Y.

Write Today for New General Catalog H-51

Osteopathic Magazine Order Blank

Without Imprinting

Delivered to Your Office	Annual Contract	Single Order
Under 200 copies	8½c each	9c each
200 or more	7½c each	8c each
Mailed Direct to List		
Under 200 copies	10¼c each	10¾c each
200 or more	9¼c each	9¾c each

Imprinted

Add $1.00 per 100 (Minimum Charge) to following prices to cover cost of imprinting:

Delivered to Your Office	Annual Contract	Single Order
*50 to 200 copies	8½c each	9c each
200 or more	7½c each	8c each
Mailed Direct to List		
*50 to 200 coppies	11¼c each	11¾c each
200 or more	10¼c each	10¾c each

(Postage regulations call for 1c additional postage on imprinted O.M.'s. This is included in above prices.)

*We do not accept imprinted orders for less than 50 Magazines.

Imprint Plate Charges

Original plate set-up on contract orders—free.
Original plate set-up on single orders—$1.00.

(No charge if plate is on file.)

Changes in set-up, $1.00 each time, whether contract or single orders.

American Osteopathic Association

212 E. Ohio St., Chicago 11, Ill. Date.....

Please send.....copies of OSTEOPATHIC MAGAZINE

.....issue.

Attach copy for professional card to this order blank

Check service wanted—

☐ Contract (Start with above issue) ☐ Single order
☐ With professional card ☐ Deliver in bulk
☐ Without professional card ☐ Mail to list

2% for cash on orders of 500 or more. Mailing envelopes free. Shipping charges prepaid in United States and Canada.

Name.....City.....

Address.....State.....

SEND FOR A PHYSICIAN'S SAMPLE OF OUR
PROTEIN DIGEST No. 26

Sidamine Tablets
or
Sidamine Granules

the amino acid tablet—uncoated—but carrying 70% protein.
no dextrose or other carbohydrate filler.

In writing for samples, please give your degree.

Professional Foods

Cedar Rapids, Iowa

COLCIN PAN-ENZYMES NORMIN

Send for details on a sound reducing regime and plan.

NOW AVAILABLE...

30 ACCEPTED PHARMACEUTICALS FOR SUCCESSFUL MANAGEMENT OF OBESITY

Yes....

Over 30 different formulas, dosage forms, colors, shapes, and sizes—all designed to get results—in one handy folder. Includes many new, as well as old reliable combinations most often used. The successful management of obesity requires comprehensive therapy, so send today for Tutag's complete list of proven, modern pharmaceuticals. Simply fill in and mail the attached coupon. Your folder and complimentary package will be sent to you the same day—as are all of our orders.

COMPLIMENTARY

A regular trade size package (100) of our new specialty METALOSE. Depresses the appetite and relieves that empty feeling in the stomach. Each tablet contains: Methyl Cellulose, 5 Gr.; d-Amphetamine Sulfate, 5 Mg.

.....*Pharmaceuticals*..... TUTAG ....

S. J. TUTAG COMPANY
19180 MT. ELLIOTT AVENUE • DETROIT 34, MICHIGAN

S. J. Tutag and Company, 19180 Mt. Elliott Ave., Detroit 34, Michigan

PLEASE SEND COMPLIMENTARY PACKAGE "METALOSE" TO

Doctor ..... Degree .....

Address .....

City ..... Zone ..... State .....

J.A.O.

CALIFORNIA

THOMAS J. MEYERS
Ph.D., D.O., F.A.C.N.
Psychiatrist
234 East Colorado Street
Pasadena 1, California

COLORADO

DR. C. C. REID
EYE-EAR-NOSE AND THROAT
620 E. Colfax Ave.
Denver 3, Colorado

NEW MEXICO

J. Paul Reynolds, D.O.
Roswell Osteopathic Clinic
and Hospital
401 N. Lea
Roswell, N. Mex.

CALIFORNIA

LEE R. BORG
D.O., F.A.O.B.Pr.
Certified by the A. O. B. P.
Proctology
1130 West Santa Barbara Avenue
Los Angeles, California
AXminster 7149

DISTRICT OF COLUMBIA

Chester D. Swope, D.O.
Osteopathic Physician
The Farragut Apts.
Washington, D. C.

NEW YORK

Thomas R. Thorburn, D.O.
HOTEL BUCKINGHAM
101 W. 57th Street
New York City

CALIFORNIA

WILFRED W. SLATER
B.S., D.O.
Esthetic & Reconstructive
PLASTIC SURGERY
L. B. 49896 1339 W. Willow
By Appointment Long Beach, Calif.

MISSOURI

ANTHONY E. SCARDINO, D.O.
Practice Limited to
Dermatology &
Syphilology
929 Bryant Building
Kansas City, Mo.

PENNSYLVANIA

CECIL HARRIS, D.O.
Psychiatry and Neurology
Central Medical Building
1737 Chestnut Street
Philadelphia 3, Pa.

COLORADO

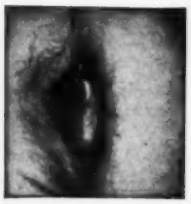
Philip A. Witt, D.O.
Urology and Surgery
1550 Lincoln Denver

MISSOURI

HAROLD COE, D.O.
F.A.C.C.Pr.,
Proctologist
501 Pine St.
St. Louis 1, Mo.

RHODE ISLAND

F. C. TRUE, D.O.
SURGEON
1141 Narragansett Blvd.
CRANSTON 5, R. I.
CHIEF SURGEON
Osteopathic General Hospital of R.I.



20% DISSOLVED BENZOCAINE FOR SUSTAINED RELIEF

Eczemas
Hemorrhoids
Burns
Post-Episiotomies
Pruritus Ani et Vulvae
Infantile Rash
Post-Surgically

Available Clear or With Chlorophyll

In Itching and Surface Pain
Control itching and surface pain quickly—sustain relief for hours—with Americaine Topical Anesthetic Ointment. Send for sample and literature.
AMERICAINE, INC., 1316-F Sherman Ave., Evanston, Ill.

Americaine TOPICAL ANESTHETIC OINTMENT
Containing 20% Dissolved Benzocaine

Just Ready—New (5th) Edition

Musser-Wohl—Internal Medicine

81 Contributors

Originally Edited by JOHN H. MUSSER, B.S., M.D., F.A.C.P.
Late Professor of Medicine, Tulane University of Louisiana, School of Medicine, New Orleans

Fifth Edition Edited by MICHAEL G. WOHL, M.D., F.A.C.P.
Associate Professor of Medicine, Temple University School of Medicine, Philadelphia; etc.

Bedside Diagnosis and Treatment! This book has been a long-time clinical favorite with both undergraduate students and general practitioners. Textwise and physically, it is ideal for study and classroom use. For practitioners, it is a source of ready reference that will immediately become a working desk manual because of its detailed clinical coverage of diagnosis, laboratory tests, prognosis, prevention and control—and most important of all—*treatment.* A distinguishing feature is the *functional approach* in which is given a description of underlying physiologic facts of each disease or group of diseases.

FEATURES OF THIS NEW (5th) EDITION

Contributions by 81 Teachers and Authorities in Internal Medicine

Definitely Clinical from Cover to Cover, with Emphasis on Diagnosis and Treatment

Many New Chapters and Numerous Chapters Rewritten and Brought Up to Date

Completely Reset and Printed from New Type

Approximately 30% More Material in This New Edition

Page Size Enlarged to 7" x 10" and Text-matter Set in 2-Column Format

10 New Color Plates

236 Black and White Illustrations, Mostly New

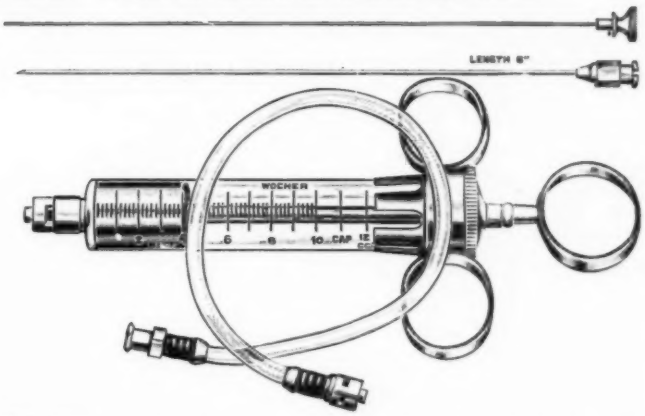
New (5th) Edition. 1563 Pages, 7" x 10". 236 Illustrations and 10 Plates in Color. $15.00.

Washington Square **LEA & FEBIGER** Philadelphia 6, Pa.

The Newest Aid to Diagnosis —

TRANSLUMBAR ARTERIOGRAPHY OUTFIT

PARKE G. SMITH, M.D.
ARTHUR E. EVANS, M.D.



Translumbar Arteriography is used to demonstrate:

1. Anomalous vessels
2. Aberrant vessels
3. Renal blood supply
4. Space-consuming lesions, cysts
5. Aortic obstruction
6. Position of placenta
7. Abnormal iliac and femoral arteries

The foregoing is a superficial list of the many advantages of translumbar arteriography. The equipment necessary to perform the operation is comparatively simple and inexpensive. It comprises a special, 12cc control syringe with 6-inch long, 18-gauge needle to puncture the aorta. A length of plastic tubing with luerlock ends is used to connect syringe and needle.

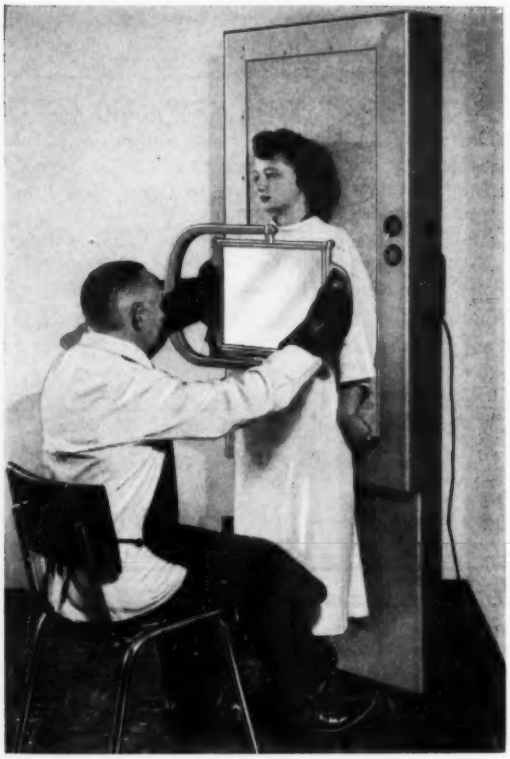
Smith-Evans Translumbar Arteriography Outfit, complete as shown . . . **$15.00**

COMPLETE DESCRIPTION OF TECHNIQUE UPON REQUEST

Wocher's

609 College St. **YOUR SURGICAL INSTRUMENT HOUSE** **Cincinnati 2, O.**

ANNOUNCING THE NEW "SPACESAVER" VERTICAL FLUOROSCOPE



LOW IN PRICE • EASY PAYMENT PLAN • INCOME AS YOU PAY

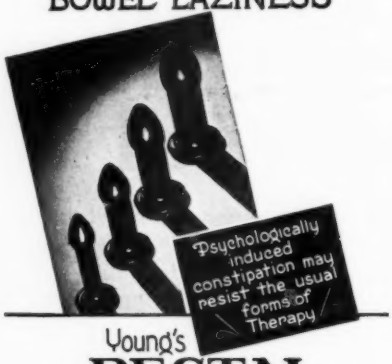
Maximum Output 15 Milliamperes — 85 Peak Kilovolts
Fluoroscopic Rating 5 Ma at 85 PKV
Minimum space required — Ideal for corner installation
Operates from regular 110-volt office lighting circuit
Two Meters, 1 for Ma, 1 for PKV, mounted on front
Two controls mounted on side of panel frame
Built-in automatic ruby light eliminates installation of a ruby light in ceiling. Provides just enough room illumination before fluoroscopy to position patient. Ruby light goes out automatically when foot switch is depressed for fluoroscopy, leaving room dark.
Full size 12" x 16" Screen centers with Tubehead
Tubehead and Screen counterbalanced for easy handling
Attractive hammered gray finish with mother-of-pearl panel

H. G. FISCHER & CO., 9451-91 W. Belmont Ave., Franklin Park, Ill.
Please send, without obligation, full information on:.....
☐ FISCHER "Spacesaver" Vertical Fluoroscope.
☐ Complete FISCHER line of X-Ray and Physical Therapy Equipment.
☐ Small Down Payment—Low Monthly Payments—INCOME - AS - YOU - PAY Plan.
☐ FREE Scaled Floor Plan showing above Unit in My Office.
☐ FREE Manual of Simplified X-Ray Technic.

Name ..... AOA

Address..... City..... Zone..... State.....

"BOWEL LAZINESS"



Young's
RECTAL DILATORS

Often produce good results through relaxation of the anal sphincter after dilatation. Made of bakelite and supplied in sets of 4 graduated sizes.

Greater than 60% improvement according to Finkel and Levine "Rectal Dilators in the Treatment of Constipation," Jour. Lancet, Minneapolis, Dec., 1948 p. 467.

Sold on prescription only. Not advertised to the laity. Obtainable from your surgical supply house or ethical drug store. Children's size, set of 4 sizes $5.50, adult set of 4 graduated $5.75. Write for brochure.

F. E. YOUNG & COMPANY
420 E. 75th St., Chicago, Ill.

DOCTOR... save on your drug and supply needs!

mail this coupon for current catalog

PHYSICIANS' DRUG & SUPPLY CO.
Third and Callowhill Sts., Philadelphia 6, Pa.
Please send me your Current catalog.

NAME _____

ADDRESS _____

CITY _____ ZONE _____ STATE _____

Advertisers' Index

Americaine Co. 64
American Felsol Co. 53
American Osteopathic Association....62
American Sterilizer Co. 20
Armour Laboratories 6, 7
B. F. Ascher & Co. 41
Ayerst, McKenna & Harrison....23

A. C. Barnes....37
Borchardt Malt Extract Co. 58, 60
George A. Breon & Co. 14
Bristol-Myers Co. ....Cover II

Carnation Co. 26
Wilmot Castle Co. 55
Cereal Lactic Co. 30
Chatham Pharmaceuticals, Inc. 49
Ciba Pharmaceutical Products, Inc....9, 21, Cover IV
Classified Ads 57
Cobbe Phar. 60
Commercial Solvents Corp. 4, 12
Cosmo-Cautery Co. 61

Dartell Laboratories 51
F. A. Davis Co. 3
Denver Chemical Co. 40
Desitin Chemical Co. 45
Devine Bros. 61
Doho Chemical Co. 47

Eaton Laboratories, Inc. 31
Esscolloid Co. 67
Ethical Spec. Corp. 48

H. G. Fischer & Co. 66
Florida Citrus Commission....29

Gomco Surgical Mfg. Corp. 62

Homemaker Products....50
Huxley Pharmaceuticals, Inc. 60

Johnson & Johnson 32, 33

Kelley-Koett Mfg. Co. 27
Kinney & Co. 16

Lanteen Medical Lab. 17
Lea & Febiger 65
Thos. Leeming & Co., Inc. 39

Medical Fabrics Co., Inc. 60
Miles Laboratories, Inc. 11
Morris & Co., Philip....68
C. V. Mosby Co. 13
Musterole Co. 61

National Drug Co. 18, 19
Nestlé Co. 8
Novocol Chemical Co. 42
Numotizine, Inc. 58

Occy-Crystine Laboratory 58
Ortho Pharmaceutical Co. 34, 35

Pelton & Crane Co. 46
Pet Milk Co. 22
Physicians' Drug & Supply Co....66
Picker X-Ray Corp. 1
Professional Cards 64
Professional Foods 63
Professional Prtg. Co. 56

Raytheon Mfg. Co. 10
Reed & Carnrick....5
Ritter Co., Inc. 52
Roerig, J. B. & Co. ....Cover III
Rystan Co. 24

Saunders, W. B. Company....Cover I
Schering Corp. 15
Shampaine Co. 43
Shield Laboratories 59
Smith-Dorsey 25
Smith, Martin H., Co. 57
Standard Pharmaceutical Co. 58
Stuart Company ....Insert

Taylor Instrument Co. 54
Teckla Garment Co. 57
S. J. Tutag Co. 63

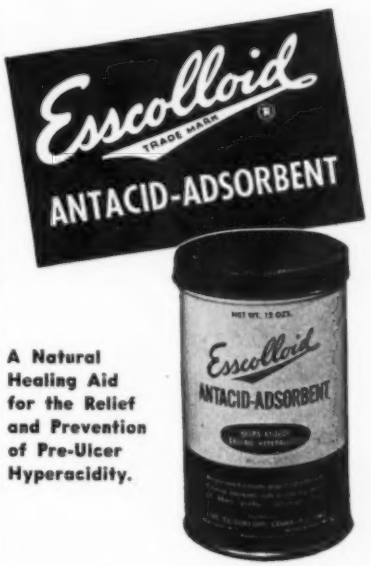
U. S. Vitamin Corp. 38
Vitaminerals, Inc. 28

Wm. R. Warner 36
Wilco Laboratories 61
Wocher, Max & Co. 65
Woodard Laboratories 44

Young, F. E. & Co., Inc. 66

ULCER RELIEF

At the first sign of new or recurring peptic ulcer, START THE PATIENT ON



A Natural Healing Aid for the Relief and Prevention of Pre-Ulcer Hyperacidity.

Peptic Ulcers tend to recur.

Colloidal Neutralization helps to remove causative factors.

Esscolloid Antacid-Adsorbent reduces painful hyperacidity *(1 tsp. neutralizes 160cc N/10 H Cl).*

Natural soft lubricant bulk assures normal peristalsis, corrects stubborn constipation.

Esscolloid Products are safe, drug-free and non-habituating.

Mail Coupon for Introductory Offer

THE ESSCOLLOID CO., INC.
1620 Harmon Place
Minneapolis 3, Minn.

NAME.....

ADDRESS.....

CITY.....

STATE.....

BELIEVE IN YOURSELF!

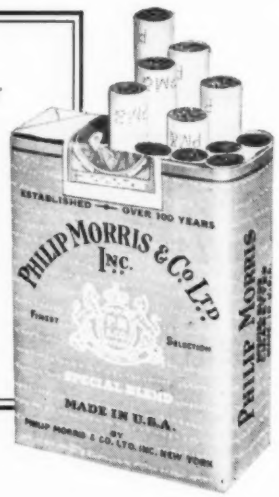
Doctor, you probably have read a great deal of cigarette advertising with all sorts of claims.

So we suggest: make this simple test...

Take a PHILIP MORRIS—and *any* other cigarette. Then,

1. Light up either one. Take a puff—don't inhale—and s-l-o-w-l-y let the smoke come through your nose.

2. Now do exactly the same thing with the other cigarette.



Notice that PHILIP MORRIS is definitely less irritating, definitely milder.

Then, Doctor, BELIEVE IN YOURSELF!

PHILIP MORRIS

Philip Morris & Co. Ltd., Inc.
100 Park Avenue, New York 17, N. Y.

Family Problem

Deficiency diseases tend to be multiple and it should not surprise you that people eating at the same table may all have deficiency diseases; the surprising thing is that one may have one deficiency disease, while another person may have an entirely different disease.[1]

1. Spies, Tom D.: Recent Progress In Nutrition, Postgraduate Med., 6:97. August, 1949.

11 MINERALS

10 VITAMINS

including **VITAMIN B_{12}**

ALL IN ONE CAPSULE

AT A PRICE EVERY PATIENT CAN AFFORD

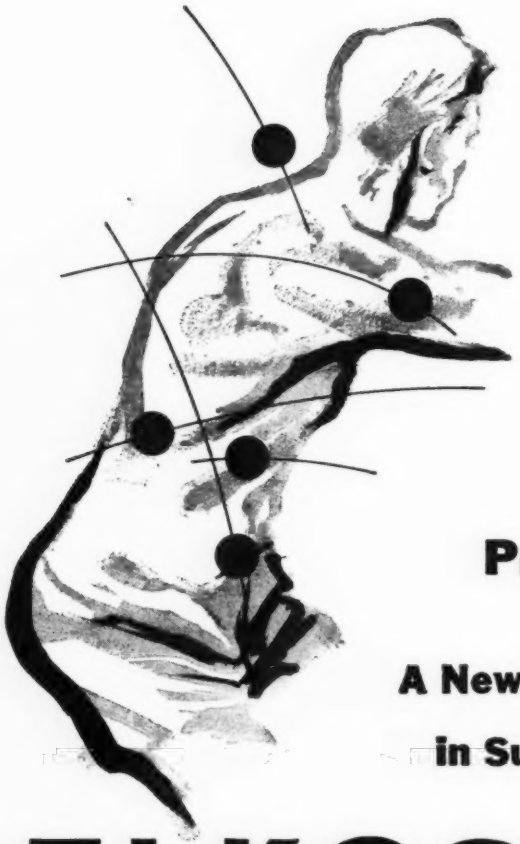
EACH CAPSULE CONTAINS:

Vitamin A	5,000 USP Units
Vitamin D	500 USP Units
Vitamin B_{12}	1 mcg.
Thiamine Hydrochloride	3 mg.
Riboflavin	3 mg.
Pyridoxine Hydrochloride	0.5 mg.
Niacinamide	25 mg.
Ascorbic Acid	50 mg.
Calcium Pantothenate	5 mg.
Mixed Tocopherols (Type IV)	5 mg.
Calcium	213 mg.
Cobalt	0.1 mg.
Copper	1 mg.
Iodine	0.15 mg.
Iron	10 mg.
Manganese	1 mg.
Magnesium	6 mg.
Molybdenum	0.2 mg.
Phosphorus	165 mg.
Potassium	5 mg.
Zinc	1.2 mg.

Available at all Pharmacies

Viterra

J. B. ROERIG AND COMPANY • 536 LAKE SHORE DR. CHICAGO 11, ILLINOIS



Ciba
Presents

A New Advance
in Sulfonamide Safety ...

ELKOSIN®

BRAND OF SULFADIMETINE

Scored 0.5 Gm. tablets.
Bottles of 100 and 1000.

- Remarkably low incidence of side effects—less than 5%
- Lowest acetylation yet reported—less than 10% in blood
- New improved solubility
- Renal complications rare—alkalis not needed
- High, sustained blood levels

WIDE ANTIBACTERIAL SPECTRUM

Ciba PHARMACEUTICAL PRODUCTS, INC., SUMMIT, N. J.

2-1090M